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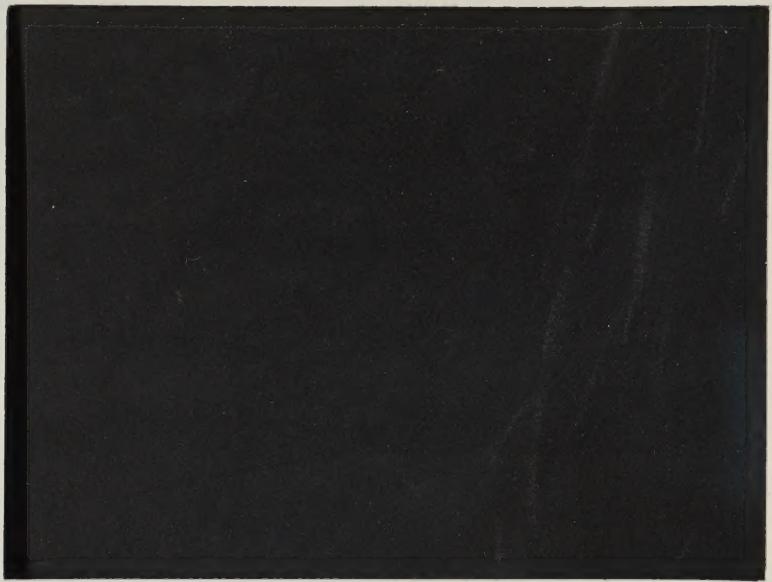
Royal Commission on Matters of Health
and Safety Arising from the Use of
Asbestos in Ontario

THE POLITICS OF RISK:
THE IDENTIFICATION OF TOXIC AND
OTHER HAZARDOUS SUBSTANCES
IN CANADA

A Study Prepared By:

G. Bruce Doern

Study Series



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This study was commissioned by the Royal Commission on Asbestos, but the views expressed herein are those of the author and do not necessarily reflect the views of the members of the Commission or its staff.



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A Study Prepared By:

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for

The Royal Commission on Matters of Health and Safety
Arising from the Use of Asbestos in Ontario

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Preface

Many individuals have assisted the research and final preparation of this study either through granting me interviews or through helpful comments on earlier drafts. I am indebted to them. Special thanks are due to my research assistants, Carol Nelder-Corvari and Garth McNaughton, to Martha Roxburgh for secretarial and administrative support, and to Linda Kahn and the staff of the Royal Commission on Asbestos for arranging the interviews and the other many necessities of any research task.

As always, I accept full responsibility for any remaining weaknesses in the study.

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Introduction

reformations. Inaddition the author's own experiences and observations have substantiated his belief that the best way to bring about a change in the educational system is through the medium of the teacher. He has also observed that the teacher is the most important factor in the educational process. The author's aim in this book is to help the teacher to understand the needs of the child and to develop the child's potentialities to the maximum. The author believes that the teacher is the most important factor in the educational process. The author's aim in this book is to help the teacher to understand the needs of the child and to develop the child's potentialities to the maximum.

Author: DR. K. L. SINGH

CONTENTS

Introduction, Pedagogic Basis, Objectives and Methods

Principles of Education, Pedagogic Techniques

Classification of Schools

Curriculum, Syllabus

Examination

CONTENTS

	<u>Page</u>
Introduction	0.1
<u>Chapter 1. PAST HAZARD IDENTIFICATION PROCESSES: LEARNING</u>	
<u>FROM SINGLE CASES</u>	1.1
BASIC CONCEPTS	1.2
- The Production Cycle	1.2
- The Political Agenda	1.3
- The Technical and Political Aspects of Identification	1.5
- Risk, Risk Assessment and Perceptions of Risk	1.8
THE CASE STUDIES	1.12
- The Limits of Interpretation	1.16
- Characteristics of the Hazard and the Identification Process	1.18
<u>Chapter 2. ASBESTOS IN ONTARIO SCHOOLS AND THE IDENTIFICATION OF</u>	2.1
<u>HAZARDS</u>	
Genesis of the School Issue: U.S.A.	2.2
Canadian Origins	2.6
The Ministry of Education's Role	2.9
The Political Linking of Occupational and Environmental Concerns	2.10
Issues Arising from the Schools Case Study	2.16

	<u>Page</u>
<u>Chapter 3. GIVING HAZARDS A POLITICAL IDENTIFICATION</u>	3.1
Scientists and Technicians	3.2
The Media	3.7
Politicians	3.18
Economic Interests	3.21
<u>Chapter 4. RECENT EFFORTS TO BE MORE SYSTEMATIC IN IDENTIFYING HAZARDS</u>	4.1
OECD PROPOSALS AND THE INTERNATIONAL FLOW OF TESTING AND SCIENTIFIC DATA	4.3
THE UNITED STATES: EPA AND OSHA	4.6
- EPA and the Toxic Substances Control Act	4.7
- OSHA and Cancer Policy	4.9
DEVELOPMENTS IN THE FEDERAL GOVERNMENT	4.13
- The Environmental Contaminants Act	4.14
- The 1977 Science Council Proposals	4.17
- The Canadian Centre for Occupational Health and Safety	4.19
- Other Federal Developments	4.20
DEVELOPMENTS IN THE ONTARIO GOVERNMENT	4.20
- Advisory Council on Occupational Health and Occupational Safety	4.21
- Ministry of Labour	4.22
- Ministry of the Environment	4.22
<u>Chapter 5. CONCLUSIONS AND OBSERVATIONS</u>	5.1
THE CENTRAL PURPOSE OF HAZARD IDENTIFICATION: DETERMINING HUMAN HEALTH EFFECTS	5.4
THE REFORM OF HAZARD IDENTIFICATION PROCESSES AND INSTITUTIONS	5.6

INTRODUCTION

This is a study of the politics of risk identification in Canada. It examines two central questions: How and why do certain hazardous substances or products get on the political agenda while others do not? Are there better ways in which Canadian society and its political institutions can learn about and understand the nature and probability of the numerous risks we face so as to deal with the most important risks first? To examine these questions thoughtfully we need to look at how single hazards have been identified in the past. We also need to examine recent efforts by various government regulators to set priorities in this complex field and thus to be more systematic in the use of scarce public and private resources.

There are several important reasons why these two central questions deserve attention especially when one is otherwise dealing with a single substance such as asbestos, the hazardous effects of which are well established. First, there are literally thousands of other substances and products which confer both benefits and risks to society or to particular segments of society. It is increasingly recognized that despite the existence of several public and private mechanisms for dealing with risk, we often know very little about the risks of certain substances, including new ones introduced into the marketplace, environment and workplace every year. Of particular concern is a newer class of risk in which health and other effects have a long period of latency before they become evident.

There is strong evidence to suggest that there is a significant gap between the public perception of risk and actual risk, at least when measured by such stark indicators as number of deaths. Nuclear power and automobile accidents are the classic examples, the latter associated with thousands of deaths but still not perceived to be as great a risk as nuclear power where deaths are few. This can lead to sharp differences of view between interest groups and governments and among regions as to which hazards should be dealt with first. It can also divert real resources (time, money, personnel and political good-will) away from those hazards which are real and evident and towards those which are much more marginal because they are far less probable, and affect far fewer people. These and other related issues will be examined in detail in this study.

Concern with how to deal with a hazard such as asbestos must be linked to this broader hazard identification process. Thus, it will quickly be evident to the reader that however much we relate our analysis in this study to the asbestos question, we are ultimately concerned with a broader field of inquiry and public policy. It is stressed, moreover, that this study must be linked to other research prepared for the Royal Commission on Asbestos, including studies on standard-setting and implementation, collective bargaining, and health, measurement and technical issues.

The focus of this study is on the identification process only. Obviously, one does not identify hazards merely for the sake of identifying them. Identification leads to some further kinds of action (or inaction) further along the regulatory and decision processes of numerous

public and private institutions. While we cannot deal with these later processes in any detail in this study, we will identify links with them as well as the ways in which these later processes in turn affect the process of identification itself.

A few introductory comments about sources and methodology are necessary. In Chapter 1 several case studies of particular hazards are examined. The initial research on these cases was conducted elsewhere. We have attempted to re-examine the case studies in their current written form to see what we could learn from them about the past processes of hazard identification. It will be evident in Chapter 1 that the cases are of uneven quality and utility for the purpose of this study but are quite useful in certain limited ways. The sources for the second and third chapters are primarily published documents and reports augmented by over fifty interviews conducted on a "not for attribution" basis by the authors with various government officials, journalists, members of interest groups, scientists, and politicians. The work for this study was also aided by the research and publication of a book on Risk Assessment at the University of Toronto Institute for Environmental Studies. This work included several other case studies and the assembly of data on risks and risk perceptions, which greatly increases the background information available in this field of study in Canada.

The report is organized into five chapters. Chapter 1 examines past hazard identification processes through the re-examination of case studies. Chapter 2 contains a more detailed case study of the "Ontario Asbestos in Schools Case" which in part led to the establishment of the Royal Commission on Asbestos itself. Chapter 3 probes more deeply into

the problems of giving hazards a political identification by focusing on the roles and interrelationships among science, the media and politicians. Chapter 4 surveys recent efforts by regulators to be more systematic in setting priorities for hazards. This includes initiatives at the international, federal and provincial levels of government, including Ontario's own efforts. In Chapter 5 we focus on the objectives and criteria which should and could lead to better processes for the identification of hazardous substances. This chapter presents several observations and conclusions about hazard identification processes and about possible institutional reform.

C H A P T E R 1

PAST HAZARD IDENTIFICATION PROCESSES:

LEARNING FROM SINGLE CASES

Our first task is to examine past hazard identification processes. How have certain hazards reached a stage where public regulatory action was deemed necessary? Is there a relatively common political journey which such hazards follow before they reach the political agenda? What triggers political action? Given the presence of risks of all kinds in modern industrial society, efforts to generalize about the past processes of identifying hazards are not easy.

We will first discuss several important concepts essential to any effort to understand these processes. These include: an appreciation of the several stages of the production process; the question of how one defines or discovers the political "agenda"; what it means to speak of the "identification" of hazards and how this is linked to the later stages of the regulatory and governmental decision processes; and the concept of risk assessment and the perception of risks.

The second part of the chapter reviews sixteen case studies with a view to determining whether there are any patterns in evidence in the ad hoc single cases. The cases will also be examined to see what we can learn from them about the respective roles of business, labour, government regulators, public interest groups, the media and scientists and medical experts in the identification of hazards.

In Chapter 2 we examine the specific case of asbestos hazards in Ontario schools, linking it to the analysis in this chapter and to the ongoing value, problems and limitations of trying to manage risks on a case-by-case basis.

BASIC CONCEPTS

The Production Cycle

To understand the hazard identification process it is necessary first to appreciate the numerous and varied points in the industrial and commercial production process where governments could (and in most instances) have intervened and hence which could be points where hazards can be identified. They include points very early in the production process where new products or resources are being developed or explored and extend right through to the disposal of waste products.¹ More particularly, the points of intervention (and hence of potential political identification) include:

- product research and development;
- mineral exploration;
- mining and milling;
- manufacture/processing in workplace;
- transportation;
- consumer use and marketing (domestic and foreign);
- internal environments (public buildings);
- external environments (emissions and effluents);

- insurance requirements; and
- waste disposal (short-term and long-term) in all stages of production.

A stark presentation of the production cycle suggests why there are numerous federal and provincial departments involved in the hazard identification process (departments of mining, labour, agriculture, transportation, environment, health, consumer affairs, public works) and why this process is usually bewildering both to Canadian citizens and often to public officials as well.

Intervention in any one or all of these points in the production process inevitably raises questions about broad political beliefs and ideas, particularly about society's relative preference for using governmental, market, or voluntary "solutions" to solve or rectify problems, real or perceived. The importance of these ideas or models of human behaviour are examined in detail elsewhere,² but they deserve introductory emphasis if one is to understand the topic of this study.

The Political Agenda

We are interested in how hazards get onto the political agenda. It must be appreciated, however, that when we speak of a political agenda as a government's or a society's "priority list" we encounter some major problems, not the least of which is that in Canada we have at least eleven governments. Governments do have occasions when they express their priorities (throne speeches, budget speeches, election platforms, major speeches by first ministers) but they have considerable difficulty, due to the vagaries and pressures of democratic political life, in holding these priorities constant for very long periods of time.³

There are, of course, certain areas of public policy and public concern which remain high on the governmental priority list. These include in the past decade inflation, unemployment, energy, and health care (i.e., general medicare). Other priority areas, however, tend to bob up and down on the list like pistons in an engine.

If one can envisage a policy field called health and safety or hazardous substances, however, it is clear that in the general political agenda this field has not been a persistently high priority concern. In terms of priorities it has hovered more on the fringes of political life. To be sure, in the late 1960s and early 1970s general concern about the "environment" reached a high level of visibility and priority. Apart, however, from periodic concern about a particular hazard (e.g., acid rain in recent years) or nuclear power, it is fair to say that the general political agenda (federal or provincial) has not left much room for the health and safety, or hazardous substances, policy field. It is axiomatic that the political agenda is always crowded and that there is only so much room at the top.

In addition to making it onto the general political agenda, persons concerned about, or harmed by, particular hazards have to muscle their way onto a second agenda, namely the agenda within the field of hazardous substances itself. There is no single "department of hazardous substances"; nor as we will see later, could one expect there to be. Hence, there is no "one-stop shopping" for those who want to acquire more health and safety from government. As we have seen, there are numerous departments whose mandates totally or partly embrace health and safety concerns. Each of these departments has a miniature agenda of its own dictated by the broader political environment as well as by the pressure, self-interest, and concern of its own particular clientele.

It must also be stressed that within any government, for every department or part of a department or regulatory agency whose task is to regulate safety and risk, there is another department or another part of the same department whose task is to promote or help develop a given industry or activity.⁴ This also affects the hazard identification process in very profound ways.

In summary then, the concept of a political agenda for hazardous substances must distinguish between the general and departmental agendas briefly examined above. The tug and pull both between and within these agendas is a major reason why it is difficult for governments to be systematic or "rational" in setting an agenda for hazards. Needless to say, we will return to this point several times later in this study.

The Technical and Political Aspects of Identification

Given the nature of the production cycle and the political agenda outlined above, it follows that the meanings ascribed to the "identification" of a hazard can be quite varied. There are clearly numerous degrees (not to mention arenas) of identification. For example, all the following examples could be said to involve some kind of identification of a hazard:

- Case 1 The insurance industry, through past industrial data on accidents and occupational risk, gradually attaches higher premiums to these areas. Through this essentially market mechanism some risks are "identified."

Case 2 Science and technical advisors to a regulatory agency in their normal reading of technical journals learn about the increased (but not conclusive) evidence linking substance X with health effect Y. A probable hazard has been "identified."

Case 3 Newspaper or media coverage of a particular hazard puts pressure on a government, which then creates a royal commission of inquiry. Again a hazard has been identified.

Case 4 A woman dies from injuries caused by an exploding pop bottle. The use of such pop bottles is immediately banned by the government.

Depending upon the eye of the beholder, each of these cases could be viewed as a satisfactory or unsatisfactory example of "identification." Judgements are obviously also a function of one's expectations about how "identification" is linked to later (or to the next) stages of decision-making in the "resolution" of the "problem." In Case 1, there is primarily a market mechanism of risk identification. In Case 2, a hazard is identified on the regulators' internal agenda but perhaps no one else's (particularly if one is not informed about the journal article). In Case 3, identification has led to the use of a particular vehicle (an inquiry) to study the problem. In Case 4, strong regulatory action has been taken.

Even the above four cases do not capture the stages through which a hazard might be identified. Asbestos can be considered to have been identified in all four ways but especially in recent years in the Case 3 and Case 4 mode. Moreover, identification does have both technical and political phases which are sometimes distinct but which often shade into one another. The history of asbestos shows that the technical phase could include:

- identification of the character of the substance;
- identification of the presence of the substance;
- identification of the effects of the substance; and
- identification of the probability of these effects actually occurring for a given population or for the population as a whole.

Indeed, these are the phases that scholars of risk in society would include in the concept of risk assessment. As we will see below, they are critical of the current risk assessment process and advocate the need for new risk assessment institutions.

We will discuss the relationship between workplace and environmental hazards in greater detail later in this chapter. It is important to note, however, that the first technical phases of identification usually begin with studies of health effects in the workplace. In contrast, the political aspects of identification may, as we will see, favour environmental hazards over workplace hazards, even though the two arenas are, in practice, almost always physically linked both by the laws of nature and of economics.

The hypothetical cases also do not capture all the political kinds and degrees of identification. It is therefore important to recognize that the focus of this study is on the dual technical and political identification of hazards. It must also be recognized that we have had to draw somewhat arbitrary boundaries around the subject since the perceived identification of hazards is linked to the kinds of later action or inaction which accompany their arrival on the political agenda. Most of these later kinds of action are examined in a separate study, Living With Contradictions: Health and Safety Regulation and Implementation in Ontario prepared for the Royal Commission on Asbestos.

Risk, Risk Assessment and Perceptions of Risk

Understanding the hazard identification process also requires a more general appreciation of the nature of risks; of professional risk assessment; and of public perceptions of risk. It is obvious that Canadians face risks of all kinds and routinely, if imperceptively, make calculations and assessments about them. These range from the vagaries of nature (floods, storms) to the ways in which individuals work and use their leisure time.

Summarizing the extensive literature on risks, the Science Council of Canada⁵ broadly categorized risks as follows:

- i) voluntary risks;
- ii) risks that can be modified by the risk-taker's behaviour;
- iii) risks that are taken involuntarily;
- iv) risks taken in ignorance of the hazard;
- v) risks in which there can be no direct awareness of the level of risk though there is a general awareness of the existence of a hazard, for example, in a low-level radiation exposure;
- vi) short-term hazards as opposed to long-term risks, where the consequences of exposure may only be seen years after the exposure has ended;
- vii) a category of special risks where the individual involved may not be in a position to assess the benefits or the damage of a procedure, for example, psycho-surgery and the medical use of drugs.

The systematic study of risks has shown, for example, that "the public is willing to accept voluntary risks roughly a thousand times greater than those represented by involuntary exposure."⁶

It is generally recognized that there must be an important scientific basis to risk assessment or risk analysis but that decisions on the acceptability of risks can only be made in a far broader political and social context.⁷ Thus formal risk assessment is an effort by technically qualified persons to determine the effects, the degree of risk, and hence the probability of particular events occurring. Based in science and statistics, formal risk assessment seeks to be objective, rational and devoid of value judgements per se, even while recognizing that there can be no absolute scientific certainty in this endeavour.

The public perception of risks, on the other hand, and the processes by which the relative acceptability of risks are determined, are only partly influenced by science. Values and emotions are very much a part of the public perception of risk and its acceptability. And politicians and regulators must often respond to perceptions of reality as they do to reality itself.

Space will not allow us to discuss the realities and perceptions of risk in any detail but it is helpful to be aware of certain broad characteristics of risk and risk perception in Canada, particularly as revealed by the recently published study by the Institute for Environmental Studies at the University of Toronto.⁸ For example, Table 1.1 taken from the above study summarizes a number of factors which influence the perception of risk. The influencing factors are numerous and illustrate why there can be a sharp distinction between real risks (as measured by number of deaths) and perceptions of risks. The study confirms findings in other industrialized countries which show that the greatest risks arise from numerous conventional hazards (drownings, auto accidents, construction

TABLE 1.1FACTORS IN PUBLIC RISK PERCEPTION

<u>Factors tending to increase risk as perceived</u>	<u>Factors tending to reduce risks as perceived</u>
Immediate (tornado)	Latent or delayed (drought)
Direct (flood)	Indirect (drought)
"Dread" hazards (cancer)	Common hazards (influenza)
Large number of fatalities per event (air crash)	Small number of fatalities per event (auto crash)
Fatalities grouped in space and time	Fatalities scattered or random in space/time
Mechanism or process not understood	Mechanism or process understood
Uncontrollable	Controllable
Involuntary (radio-active fallout)	Voluntary (mountain climbing)
Children at risk (asbestos in schools)	Children not at risk (vinyl chloride)
Identifiable victims (plant workers)	Statistical victims (cancer from environmental radiation)
Lack of education	Education
Lack of belief in authority of source of information (private industry)	Belief in authority of source of information (university scientists)
Much media attention (Polycholorinated Biphenyls - PCBs)	Little media attention (the transport of liquified natural gas - LNG)
Unfamiliar (nuclear accident)	Familiar (house fire)
Major accident (Mississauga Chlorine derailment)	No major accident (LNG transport)

Source: Adapted from Burton and McCullough, eds., Living with Risks: Environmental Risk Management in Canada (Toronto: University of Toronto, Institute for Environmental Studies, forthcoming Spring 1982).

activity, heart disease, etc.) rather than from the "newer" hazards some of whose effects may now be known but the majority of which we know little about or whose effects could only be known many years later.

The difference between reality and perception is, of course, not necessarily an irrational response on the part of Canadians. Canadians may well be aware of these other real risks but feel that many of them are controllable by their own actions. But their concerns may increase when the hazards are involuntary or affect their children or future generations. In total, these kinds of concerns are part of the heightened general environmental consciousness of Canadians evident in the 1970s.

The gap between perceptions of risk and reality can, however, affect and distort the allocation of resources in the health and safety field. At a time of generally scarce financial resources, it is quite likely that some of the new hazards that emerge on the agenda do divert resources away from areas where there is demonstrably greater risk. The question remains: How does one rationally and democratically allocate health and safety resources for society as a whole, keeping in mind that health and safety resources are only part of the allocations that society must make?

Needless to say, one must be extremely cautious in interpreting disparate public opinion data about hazards. Canadian data does show that environmental issues are important to Canadians but other economic issues are consistently ranked higher. However, Canadians are rarely asked to rank specific hazards, much less to express opinions about how they would rank and trade off the benefits and costs of particular hazardous products or substances.

As we proceed to an examination of the case studies and to our analysis of recent efforts by governments to be more systematic about hazards and risk, it is essential to keep the difficult conceptual problems outlined above fully in mind. The nature of the production cycle, the several high priority and low priority political agendas, the slippery nature of knowing when a hazard is technically and politically "identified," and the distinction between risk, risk assessment and perception of risk are all important concepts in the analysis to follow.

THE CASE STUDIES

Although general legislation covering large categories of hazards such as pesticides, drugs, environmental contaminants and occupational risks has been in place for several years, it has been primarily through single cases that much of Canadian society and its institutions have "learned" about hazards. Several of these cases have been examined from a variety of perspectives and in widely varying contexts. We thought it would be instructive to re-examine several of these disparate "health and safety" cases, as we shall call them, to see what they might tell us (if anything) about the nature and processes of hazard identification. We stress that our review of them will focus on the identification phase only, rather than on later stages of actual regulation.

Sixteen case studies were reviewed. These were studies of:

- Sour Gas in Alberta
- Solid Waste Disposal in Maple, Ontario
- Metal Particulate Smelter Emissions in Sudbury
- 2-4-5 T in Canada
- Transportation of Gasoline
- PCBs in Ontario⁹
- Arsenic in the Northwest Territories¹⁰
- Radiation at Elliot Lake
- Vinyl Chloride
- Asbestos (until 1977)
- Lead
- Oxides of Nitrogen
- Mercury¹¹
- Exploding Pop Bottles¹²
- Language and Air Traffic Safety Dispute¹³
- Grain Dust¹⁴

Space does not allow us to reproduce even a summary description of these cases. References to the original case studies are cited. To guide our discussion of the cases, in the limited context in which they are used in this study, we have provided Table 1.2, the use and limitations of which are explained below.

TABLE 1.2

SELECTED CHARACTERISTICS OF HAZARD IN 16 CASE STUDIES OF HAZARD IDENTIFICATION

CASE STUDY	CHARACTERISTICS OF HAZARD						Carcinogenicity Yes No
	I			II		Carcinogenicity Yes No	
	Exclusively E	Primarily E	Equally E/W	Exclusively W	Primarily W		
Sour Gas in Alberta	X				X	X	
Solid Waste Disposal in Maple, Ont.		X			X	X	
Metal Particulate Smelter Emissions in Sudbury, Ont.				X		X	
2-4-5 T in Canada			X		X	X	
Transportation of Gasoline				X		X	
PCBs in Ontario	X					X	
Arsenic in North West Territories				X		X	
Radiation at Elliott Lake					X	X	
Vinyl Chloride			X		X	X	

continued on next page

CHARACTERISTICS OF HAZARD

CASE STUDY	CHARACTERISTICS OF HAZARD						Carcinogenicity Yes No
	I			II		III	
	Exclusively E	Primarily E	Equally E/W	Exclusively W	Primarily W	vs. Workplace (W)	
Asbestos (until 1977)			X			X	
Lead		X				X	X
Oxides of Nitrogen		X				X	X
Mercury		X				X	X
Exploding Pop Bottles			X			X	
Language and Air Traffic Safety				X	X		X
Grain Dust				X	X		X

The Limits of Interpretation

We have tried to keep fully in mind the numerous limitations in using case studies in this second-hand fashion. These limitations include:

- the studies were originally written for purposes other than examining the identification of hazards only;
- we rely on the original author's presentation and interpretation of the facts and events in the case. We have not re-checked or reviewed these facts but rather have accepted them as given;¹⁵
- the cases reflect an extraordinary range of circumstances from highly localized events (e.g., Solid Waste Disposal at Maple, Ontario) to an event described by some in 1976 as a national crisis rivalling the Conscription Crisis of 1944 (the Language and Air Traffic Safety case);
- the cases cover the full spectrum of environmental, health, occupational and consumer hazards.

Needless to say, these limitations present problems that go well beyond those of attempting to compare "apples and oranges."

Why, one could properly ask, should one attempt to extract any generalizations or "lessons" from such an unmanageable batch of "data"? Moreover, there is some general agreement among experts that the ad hoc case-by-case approach of the past is simply inadequate, and hence the past teaches us little. We must, it follows, be more rational and more systematic in our approach to hazards.¹⁶

These are, to be sure, important arguments which counsel extreme caution in the use of these case studies. There remains, however, a modest but not unimportant justification for looking at these cases. This

rationale centres first on the highly probable event, if the theory and practice of public policy are any guide at all, that we will have to deal with and learn the best we can from numerous single case hazards in the future.¹⁷ Moreover, it may simply be useful to know, to confirm, or to place in doubt, certain intuitive views (hypotheses?) which various groups, interests, or individuals have about how hazards are identified.

It is with this measured sense of analytical caution and modest inquisitiveness that the case studies are reviewed. In the total context of this study, moreover, the cases form only one part of the analytical base for the conclusions presented in Chapter 5.

Ideally, the objective in analyzing the case studies is to identify what factors cause a hazard to be identified on the political agenda and to rank these factors. In short, we would like to discover causal patterns of behaviour. In addition to those issues noted in the previous section, there are several other problems which make this task difficult.

We have already noted in the first part of the chapter the considerable difficulty in defining when a hazard is identified, since the adequacy of the identification is itself a matter of politics and hence of different political views and perceptions. This will be even more obvious when we examine in Chapter 3 how the major institutional actors tend to view the question of identification.

It must also be appreciated that the factors influencing the public perception of a hazard or risk outlined in Table 1.1 need not necessarily be the same as those which propel a given hazard on to the political agenda as an identified hazard. Hazard identification is undoubtedly influenced in a general way by broad public perceptions but Table 1.1 says little about the major power and influence of institutions in determining which hazards are identified.

Another difficulty which cannot be ignored is the time scale for analysis. Obviously some hazards have appeared on the agenda more than once and in different political arenas. Each case is artificial to the extent that the writer must wrap it in a package with a beginning and an end.

With these further important caveats in mind, we have chosen to examine the cases in relation to selected characteristics of the hazard itself. In Chapter 3 we will refer to the cases again for more general illustrative purposes when we examine the role of scientists, the media and politicians.

Characteristics of the Hazard and the Identification Process

Table 1.2 presents a profile of the cases in relation to selected characteristics of the hazard itself. The characteristics selected for examination have been informed by several questions or propositions:

- Is there a stronger tendency for environmental hazards to be identified than workplace hazards?
- Are involuntary hazards more likely to be identified than voluntary ones?
- Are hazards believed to be carcinogenic more likely to be identified than other kinds of toxic hazards or other kinds of risks?

To enable us to say anything about these questions based on the case studies, we shall assume that each of the case studies deals with a hazard that has been identified and is on the political agenda (local, provincial, national). We shall then report on the degree to which this rough evidence confirms or rejects the propositions listed above. Additional comments based on other sources will also be offered where appropriate.

Given that in ten of the sixteen cases the hazards were characterized as largely or exclusively environmental and that only four were largely or exclusively occupational (the other two were characterized as equally environmental and occupational) one could conclude that there is a stronger tendency for environmental hazards to be identified than occupational ones. This would coincide with a certain amount of intuitive logic, namely that environmental hazards are likely to affect larger numbers of people in the general population than an occupational hazard, and hence more institutions will be potentially concerned and press for some kind of action. This logic would be reinforced by the intuitive view that the media is more inclined to cover environmental hazards for similar reasons. Our interviews with reporters only partly sustain this expectation of media bias (see Chapter 3). It must be remembered that these interviews reflect what journalists think, not necessarily what they do. Interestingly, three of the four occupational hazards also involved workers located in hinterland and/or rural settings in an industry that was dominant to that town (e.g., Elliot Lake, Thetford Mines) or province (Saskatchewan grain elevator workers). Geographically concentrated exposure seemed to enhance the prospects of an occupational hazard getting on the agenda, at least on the local agenda.

While an environmental bias seems to be evident and may even be logical in political terms, one must be careful about reading too much into this finding. In the final analysis environmental and occupational hazards are linked and inseparable especially as more and more is known over time about a hazard. If, however, it is more difficult for occupational hazards to be politically identified, then this may suggest the need for special institutional measures to ensure that occupational hazards are more readily identified in a political as well as technical sense.

The question of the voluntary versus involuntary characteristic of hazards is much more problematical. On the one hand, as we have noted before, there is evidence in the risk analysis literature that people are prepared to accept risks of a voluntary nature (risks they can do something about) to a much greater degree than they accept involuntary risks. Virtually all of the cases reviewed for this study could be considered to involve involuntary hazards. Thus, the proposition that involuntary hazards are more likely to be identified would be confirmed. It is increasingly recognized, however, that the voluntary-involuntary definitions are slippery indeed and are loaded with more questions than answers. For example, people can avoid the use of pop bottles if they know that certain ones are less safe than others. Or they can drink less pop. Similarly, some people can choose not to fly. For low income persons air traffic safety may be a minor concern since they cannot afford to fly at all. Thus, for most hazards there is a different voluntary-involuntary continuum in which different groups or persons could be located.

As a single characteristic the voluntary versus involuntary characteristic is at best a slippery one and by itself probably does not explain much about how hazards are identified, certainly not on a logical basis at least. The difficulties apply to workplace hazards as well where it is too often assumed by enthusiasts of the market model of human behaviour that workers can choose their occupations or at least be paid a premium wage where the hazards are known to be higher.¹⁸

Only six of the cases deal with hazards believed to be carcinogenic in nature. The other ten cases involve other kinds of toxic effects and/or physical injury. This suggests that probable carcinogenicity has not been the dominant factor in determining which hazards are identified, at least not to date. On the other hand, as our analyses in later chapters will show, there are numerous difficulties in scientifically identifying carcinogenic characteristics given the long latency period of the disease. There seems little doubt, however, that "fear of cancer" will be an increasingly important factor in the politics of identifying risks, all the more so if it can be shown to have genetic effects on children and even unborn generations to come.

In addition to the above-noted characteristics, we examined the cases in relation to the degree of agreement or controversy about technical data among the interests involved. Among the sixteen cases there was strong disagreement over data among the interests in six of the cases; moderate disagreement in nine other cases; and reasonable agreement in one case. This suggests that controversy about scientific and technological data is a feature of most hazards that have been identified. One would think that the more agreement there is about a hazard the easier it would be for it to be identified. The cases suggest that the greater the technical controversy the more likely the hazard is to achieve some degree of political identification. This perverse finding requires very careful interpretation. It reflects the need to point out again the differences between (a) scientific identification of a hazard (so-called objective risk assessment) where something is identified when there is reasonable scientific agreement; and (b) the political basis of identification, where identification may be aided by the sheer presence of dis-

agreement or conflict. It is important to stress again that we are dealing only with identification and not later stages in the regulatory process. It is also important to stress that the cases reveal different kinds of technical disagreements which we have lumped together for purposes of presentation. Technical dispute could involve, as noted earlier, identification of the character of a substance, its presence, its effects and its probability.

A recent study by one of the authors of scientific and technological controversy in federal decision processes also points out that much of what is often labelled as scientific and technological controversy is not perceived to be purely scientific or technological in nature by senior decision makers but rather is often a surrogate for the underlying economic and political interests involved in these questions.¹⁹ These issues will be borne out in the analyses in Chapters 2 and 3.

Case studies by their nature are primarily unique events. The sixteen cases reviewed demonstrated that each case has its own attributes, physical situation and levels of complexity. To augment the secondary review of these cases we now proceed in Chapter 2 to examine in detail a further case study, Asbestos in Ontario Schools. We do this both because the case led in part to the establishment of the Royal Commission on Asbestos itself and because it launched a large-scale asbestos control program. We also examine it because it is essential to appreciate the texture and detail of a single case if one is to fully appreciate the political and technical aspects of the hazard identification process.

NOTES TO CHAPTER 1

1. See Economic Council of Canada, Reforming Regulation (Ottawa: Supply and Services Canada, 1981) and G. Bruce Doern, ed., The Regulatory Process in Canada (Toronto: Macmillan of Canada, 1978), Chapter 1.
2. Peter Aucoin, "Theories of Policy Making," in Public Policy in Canada: Organization, Process and Management, eds. G. Bruce Doern and Peter Aucoin (Toronto: Macmillan of Canada, 1979), Chapter 1.
3. For an analysis of priorities since 1970 see Richard W. Phidd and G. Bruce Doern, Policy Formulation in Canada (Toronto: Methuen, forthcoming), Chapter 3.
4. Ibid., Chapter 2.
5. Science Council of Canada, Policies and Poisons, Report No. 28 (Ottawa: Supply and Services Canada, 1977), p. 26.
6. Ibid., p. 26.
7. See C. Starr, "Social Benefit versus technological risks," Science 165 (1969): 1232-1238; Aaron Wildavsky, "Richer is Safer," The Public Interest 60 (Summer 1980): 23-39; David Okrent, "Comment on Societal Risk," Science 208 (25 April 1980): 372-375; W.W. Lowrance, Of Acceptable Risk: Science and the Determination of Safety (Los Altos, Calif.: Kaufmann, 1976); C. Starr and Chris Whipple, "Risks of Risk Decisions," Science 208 (6 June 1980): 1114-1119; and Gio Batta Gori, "The Regulation of Carcinogenic Hazards," Science 208 (18 April 1980): 256-261.

8. Ian Burton and Roger McCullough, eds., Living With Risks: Environmental Risk Management in Canada (Toronto: University of Toronto, Institute for Environmental Studies, forthcoming Spring 1982).
9. The first six case studies on this list can be found in Burton and McCullough, eds., Ibid.
10. See Lloyd Tataryn, Dying For a Living (Ottawa: Denberg, 1979), Chapter 4.
11. For the case studies of radiation, vinyl chloride, asbestos, lead, oxides of nitrogen, mercury, see G. Bruce Doern, Regulatory Processes and Jurisdictional Issues in the Regulation of Hazardous Products in Canada, Background Study No. 41 (Ottawa: Science Council of Canada, 1977) and G. Bruce Doern, Government Intervention in the Canadian Nuclear Industry (Montreal: Institute for Research on Public Policy, 1980), Chapter 5.
12. Margaret Jaques, "A Case of Exploding Pop Bottles," in Collected Essays (Ottawa: School of Public Administration, Carleton University, 1980), Chapter 1.
13. Sandford F. Borins, Language of the Air. Research project prepared for the Institute for Research on Public Policy (Toronto: Faculty of Administrative Studies, York University).
14. G. Bruce Doern and John Kowalsky, The Grain Dust Case (Toronto: Institute of Public Administration of Canada, Case Program, 1979).
15. It should be noted though that the author was involved directly in conducting, writing and/or supervising the research into eight of the case studies used.

16. See the reference cited in note 7. See also Chapters 3 and 4 of this study.
17. The tendency for society both to learn and to make decisions in discrete small steps is a central theme in public policy theory and literature. See Charles Lindblom, The Policy Making Process (Englewood Cliffs, N.J.: Prentice Hall, 1968).
18. For a sensible discussion of these difficulties see G. Reschenthaler, Occupational Health and Safety in Canada (Montreal: Institute for Research on Public Policy, 1980), Chapter 2.
19. G. Bruce Doern, The Peripheral Nature of Scientific and Technological Controversy in Federal Policy Formation, Study No. 46 (Ottawa: Science Council of Canada, 1981).

CHAPTER 2

ASBESTOS IN ONTARIO SCHOOLS AND THE IDENTIFICATION OF HAZARDS

In 1912 the Canadian Labour Gazette reported that dust in the air of asbestos mines and milling operations in Quebec was having a "weakening" effect on the lungs of workers. Several cases of tuberculosis were identified, however an inquiry failed to establish any connection between the disease and exposure to asbestos.¹

Many years and many lives later, medical research has established conclusive evidence that exposure to asbestos fibres can lead to asbestosis (a disabling lung disease), lung cancer, and mesothelioma, a rare cancer of the membrane lining the chest and abdominal cavities.² The dangers of asbestos exposure as an occupational hazard have been debated for over sixty years. However, in the early 1970s concern about the "miracle mineral" moved into the consumer arena when Canada, following the U.S., began to ban consumer products containing asbestos, such as hair-dryers, children's toys, and clothing products.³ In the late 1970s still another wave of public concern mounted when it was discovered that some school children might be inadvertently exposed to asbestos fibres released from building materials in public schools.

As concern for asbestos hazards broadened from occupational to consumer safety, to recognition as a general public health problem, various organizations, such as scientific institutions, labour unions, public

interest groups, political parties, government officials and the media, played differing roles in the political identification and response process.

The first part of this chapter traces the chronology of events that triggered a transition of the asbestos issue from the occupational arena to the public schools. Special attention is given to how the broadening of the asbestos issue and the simultaneous increase in media attention and public pressure forced the issue onto the political agenda, resulting in the establishment of the Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario and the asbestos control program in Ontario schools.

The second half of this chapter focuses on the interrelationship of the primary participants in the schools case, and their role in the issue recognition and response process.

Genesis of the School Issue: U.S.A.

Due to its virtual indestructability and resistance to fire, heat and friction, asbestos became an important and often required component of many building materials. Friable asbestos-containing materials, which were used extensively in buildings for insulation and fireproofing between 1940 and 1973 are of primary concern.⁴

Most of the friable material was applied by spraying onto ceilings, walls and other surfaces. If this material deteriorates or is disturbed by new construction or other activities, the asbestos fibres may be released into the air where they are easily inhaled.

The U.S. Environmental Protection Agency (EPA) banned the use of friable spray-on asbestos for insulation and fireproofing in 1973. This was followed by further prohibitions in 1978, for nearly all insulation uses.⁵

The first incident concerning asbestos hazards in schools to attract a significant level of public concern surfaced in Howell Township, New Jersey, in the fall of 1976.⁶ Recognition of asbestos exposure in Howell schools occurred when a parent, employed by the State Department of Environmental Protection, took the initiative to test suspect material flaking from the ceiling of a local school. The tests revealed asbestos content and concerns were expressed before the local school board. Faced with a threat of a class boycott and pressure from the State Department of Education, the board closed six elementary schools and commenced a \$180,000 removal program.⁷

The Howell Township incident quickly ignited statewide concern in a population already sensitive to the hazards of asbestos in the workplace (Johns-Manville and Raybestos-Manhattan operate large-scale asbestos manufacturing plants in the state). A statewide survey was requested by the Department of Education. Responses revealed that 265 schools out of 2,400 had identified the presence of asbestos materials.⁸ In the town of Cunnamin, New Jersey, a citizen action group called Concerned Parents Against Asbestos was formed. Unwilling to wait to see whether state or federal aid would be forthcoming, the school board, under pressure from the parents group, held a public referendum that approved a \$2.6 million bond issue to remove asbestos from the local schools.⁹

Meanwhile, concern for asbestos in schools began to develop in other states. In February 1977, the Massachusetts Public Interest Research Group, a research-action organization, conducted the first nationwide survey to identify the level of awareness and action in the state governments.¹⁰ Thirteen out of the twenty-four states that responded reported initiating some type of identification process. However, most of the states had only minimal knowledge about the potential hazards of asbestos.

In May 1977, a memorandum entitled "Public Health Recommendations Regarding Asbestos Spray Building Materials" was circulated to State governments by the Center for Disease Control in Atlanta, Georgia.¹¹ This scientific information, along with news about the New Jersey case, prompted other states to initiate some kind of asbestos identification process.

Responding to pressure from an extensive network of public interest groups, the Massachusetts government initiated a comprehensive approach to the school asbestos problem. A fourteen-member Asbestos Commission was established in 1975.¹² This body pulled together expertise from various departments and scientific institutions to co-ordinate a state-wide effort to identify and abate asbestos hazards in schools. Scientific research commissioned by the Asbestos Commission supplied valuable information that eventually formed the basis of the federal Environmental Protection Agency's nation-wide information program.¹³

As other states began to struggle with the issue, the Mount Sinai School of Medicine in New York became an important source of scientific knowledge. Research conducted by the School accompanied a letter from the Secretary of Health, Education and Welfare warning all state governors about the potential problem.¹⁴

In November of 1978, a comprehensive article entitled "Asbestos in Schools: Walls and Halls of Trouble" was published in the American School Board Journal.¹⁵ This article, followed by a series of reports in other health and educational journals, gave the issue a greater national profile, at least for school administrators. With the increased prominence of the issue, pressure was put on the federal government to provide technical and monetary assistance.

The extensive powers given to the federal EPA under the Toxic Substances Control Act (1976) made it the most likely department to assert jurisdiction over the issue. After six months of unsuccessful negotiations with the agency, the Environmental Defence Fund (EDF), an environmental interest group, petitioned the EPA under the Act.¹⁶ The EDF charged the agency with negligence in refusing to assert jurisdiction. According to the Act, the EPA had 90 days to respond to such petitions before being subject to judicial review. On March 28, 1979, the EPA announced that it was undertaking a nation-wide information and technical assistance program.¹⁷

By 1980 the majority of U.S. public schools had not yet been surveyed for asbestos hazards so the EPA began to collect evidence to require mandatory inspections. The announcement of proposed mandatory inspections and a bill to provide federal grants appeared in the Federal Register on September 17, 1980¹⁸ but no legislative action had occurred at time of writing.

Canadian Origins

The first public recognition in Canada of problems associated with asbestos in public buildings surfaced on page one of the Winnipeg Free Press in December of 1978 and again in January of 1979.¹⁹ The priority of these news report was enhanced by expert information given by Manitoba physicist Francis Konoposek who had recently completed research on asbestos under a federal government contract. In June asbestos in schools became a political issue when the opposition New Democratic Party asked the Manitoba Government what it intended to do about the health risk to school children. Education Minister Keith Cosens promised an investigation.²⁰

In July a Winnipeg Free Press reporter, Noelle Boughton, reported on the New Jersey case and U.S. action on the issue.²¹ By August a school trustees-government probe had uncovered asbestos hazards in two Manitoba schools with survey results from fifty out of fifty-five school divisions still to come in.²²

On July 31, 1979, the school asbestos issue erupted into public consciousness in Ontario when most major provincial dailies reported that one-hundred mentally retarded children were being exposed to asbestos fibres flaking from the ceiling of Dundurn school in Hamilton.²³

Original concerns about asbestos dust at Dundurn were expressed in 1976 by employees of the Hamilton South Central Region Library, who shared the building with the school. An inspection of the premises was conducted by the Occupational Health Branch, then located in the Ontario Ministry of Health.²⁴ These tests revealed that asbestos fibre levels were below industrial guidelines. When the employees expressed concern

in 1979 through their union, Local 932 of the Canadian Union of Public Employees, the Hamilton Board of Education commissioned the Ontario Research Foundation (ORF) to conduct air samplings. The ORF reported fibre levels of .01 to .05 fibres per cubic centimetre which is below the industrial guideline of 2 fibres per cubic centimetre but not below the environmental criterion of .04 fibres.²⁵ Concern or awareness that the environmental criterion might apply in these circumstances was not evident.

As the press continued to pursue the issue it became clear that the Government of Ontario was not initially prepared to deal with the asbestos hazard in public buildings. Some initial concern arose as to whether industrial guidelines of acceptable exposure were applicable to public schools where young children are exposed for prolonged periods. Some medical experts believe that, for several reasons, young children may be more susceptible than adults to adverse health effects from a given exposure to asbestos.

Mr. Hugh Nelson, then Director of the Occupational Health Branch of the Ministry of Labour, was the first government official to be identified with the Dundurn issue. Nelson was quoted in a press report as claiming that, "In the schools there should be no asbestos."²⁶ He cited the fact that the 2 fibre standard was set for industrial workers who wear protective equipment and that even small amounts of exposure over long-term periods can present a health risk. Press accounts indicated that the Hamilton School Board reaction was very defensive. Mr. Singer, a spokesperson for the board, was quoted as saying, "The report has said it is safe, so we are satisfied. I understand there was just one standard for humans whether in factories or schools."²⁷

At this point it is important to note again that there was little knowledge of the possibility that environmental guidelines might apply. The schools issue fell between the workplace and the environment and hence into an apparent jurisdictional vacuum. Moreover, basic technical knowledge was absent and there was some confusion as to where to go to obtain it.

With the Ontario Legislature then adjourned in the summer in 1979, cabinet ministers were less readily available and the departmental officials had to carry more of the Ontario Government's front line responses. Jurisdictional overlap between the Ministries of Education, Labour, Health, and Environment became even more apparent. No one department had comprehensive legislation comparable to the U.S. Toxic Substances Control Act under which to assert jurisdiction. Although the Occupational Safety and Health Division of the Ministry of Labour had the most expertise, and was directly responsible for the Hamilton Library personnel, the Ministry of Education became the focus of attention when it was revealed by the media that the Ministry had initiated an asbestos school survey on June 25th.²⁸ The Globe and Mail reported that Mr. Stan Orlowski, associate chief architect for the Ministry of Education, said that the survey was already underway and had nothing to do with publicity surrounding the Dundurn case.²⁹

The Dundurn case was not just a "summer tempest in a teapot." As Rosemary Speers of the Globe and Mail reported, "It has much greater ramifications than Dundurn School: no one knows how many Ontario buildings contain deteriorating asbestos."³⁰

The Ministry of Education's Role

The memorandum was issued on June 25th by the Director of the Ministry of Education's Grants Policy Branch, and circulated to all Directors of Education.³¹ It requested that a survey be conducted to identify asbestos hazards in schools. The following data was requested by August 31st, 1979:

- name of institution;
- use of exposed asbestos in the form of sprayed surfaces, wall boards, counter tops, etc.;
- plans for a remedy of existing conditions.³²

No information about potential hazards of asbestos exposure was given at this time. There was no guidance on how to carry out inspection, how to identify materials, where to send them for testing, or how to correct the problem.

The memorandum was a stark indicator of the Ministry's own lack of technical expertise, the difficulty of obtaining it and the mounting need to produce a co-ordinated response in the face of growing media pressure, and of the increased calls coming from school board officials. The burden of the Ministry of Education's response fell on the shoulders of one official, with little expert help available from elsewhere, at least initially.

To overcome the problems of overlapping jurisdiction and scarce expertise, an Interministerial Committee on Asbestos was created by the Ministry of Labour.³³ It included representatives from the Ministries of Environment, Consumer and Commercial Relations, Health, and Education.

The Committee was an unofficial group which only met on a "crisis management" basis.³⁴ A manual entitled "Inspection of Buildings for Asbestos" (designed after the EPA document) was put together by the Ministry of Labour for the Ministry of Education. On January 25, 1980, the manual was sent out along with the Ministry of Education's second survey request.³⁵ The memorandum that accompanied the manual gave instructions to send samples of suspect material to the Occupational Health Laboratory of the Ministry of Labour. It recommended that if tests prove that an asbestos hazard exists "an assessment should be carried out to determine what corrective action should be taken by school boards and other educational authorities."³⁶

When the Legislature reconvened in the fall of 1979, asbestos in schools was not an issue of much debate. The NDP still focused on asbestos as an occupational hazard, but the schools question was only brought up occasionally in enquiries on the progress of the school survey.

On November 13th the Minister of Education, Bette Stephenson, addressed the Social Development Committee of the Legislature. She acknowledged that asbestos was a potential problem in schools but claimed the media had blown the issue out of proportion. She announced that when the results of the survey had been compiled, the Ministry would embark on a correction program of removal or encapsulation.³⁷

The Political Linking of Occupational and Environmental Concerns

By January of 1980, the Ministry of Education was receiving approximately fifty calls a day from school boards,³⁸ parents, unions and private businessmen with concerns and queries about asbestos in schools,

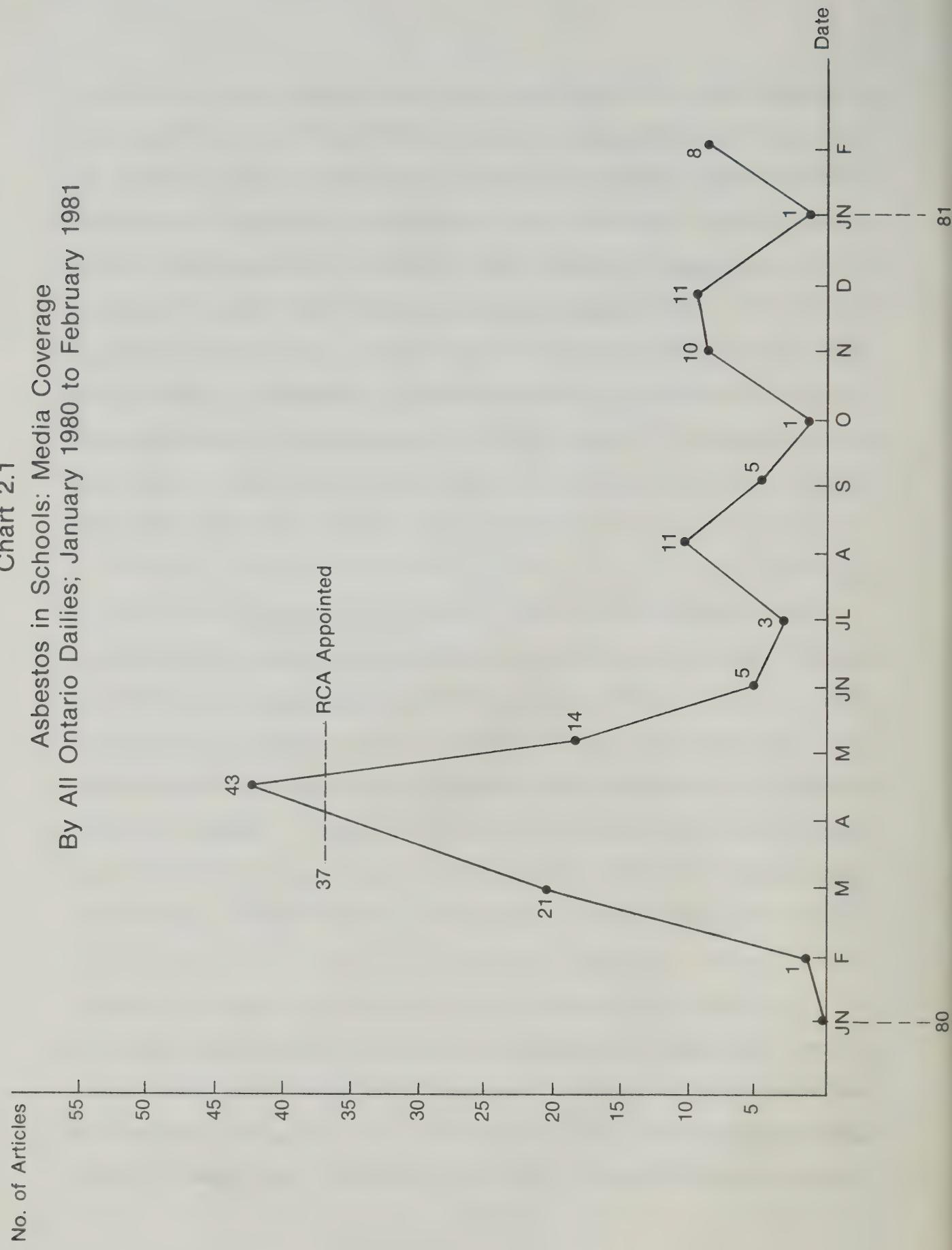
but press coverage of the issue had fallen sharply (see Chart 2.1). There was virtually no press coverage of the issue until test results of material in eight Scarborough schools necessitated corrective action by its school board. On March 24th an article by Ross Howard on the front page of the Toronto Star stated boldly "Asbestos and Cancer: What You're Not Told."³⁹ Howard summed up the magnitude of the potential asbestos hazard by quoting a Ministry of Labour official, G. Rajhans, as saying, "You can bet that 90% of the multi-storied buildings built before 1972 contain asbestos."⁴⁰ Another article by Ross Howard in the same paper reported that school boards were confused about the asbestos alert and only fourteen of more than three-thousand Ontario schools had been sampled.⁴¹

Howard's warnings about the potential environmental health risks of asbestos were given added political and media impetus by the reported death of Clifton Grant on March 27th from occupational exposure. The thirty-seven-year-old Grant, a carpenter for the Scarborough School Board and member of CUPE Local 149, spent an average of one day a week sawing asbestos tiles and sheets for school buildings.⁴² Medical testimony presented before the Workmen's Compensation Board on March 26th concluded Grant had died from mesothelioma caused by asbestos exposure in the workplace.⁴³ The WCB recognized the claim.

Distribution of information about the Grant case came from members of CUPE Local 149. They expressed outrage that they had not been told that Grant had begun receiving compensation for mesothelioma prior to his death on September 12, 1979. Members were also not consulted about corrections in the Scarborough schools over the March school break. Finding

Chart 2.1

Asbestos in Schools: Media Coverage
By All Ontario Dailies; January 1980 to February 1981



the School Board and the Government unco-operative, representatives of the Local took their concerns to the NDP.⁴⁴ They informed the NDP research staff about the Grant hearings on March 26th. NDP representatives went to the hearing and then sprung the issue on the Davis Government the next day in the Legislature. NDP member Monty Davidson, in reference to the Grant case, questioned Stephenson, the Minister of Education, "Is the Minister not now concerned that the situation of asbestos in schools is more serious than we had previously been led to believe, and can she tell us what she plans to do to ensure the safety and well-being of all those who may be affected."⁴⁵ Stephenson replied with a chronology of Ministry actions. The Minister was caught off-guard and the media instinctively picked up on the issue. It is also instructive to note that the questions were directed to the Minister of Education and not the Minister of Labour, notwithstanding the occupational nature of Grant's death.

The Grant case, and the later revelation by the NDP that a North York School Board employee, Ken Gardner, had also died from work-related asbestos exposure, heightened the public knowledge and political priority of the asbestos in schools issue.

Environmental and occupational concerns were now linked to form at least a temporary coalition to pressure the Government. The NDP knew it had hit on a sensitive issue and quickly moved to intensify the pressure. On March 31st Toronto's Harbord Collegiate Institute closed down when teachers and students walked out after Ed Ziemba, then the NDP member for High Park-Swansea, warned them about hazards from asbestos-covered fire dampers.⁴⁶ The incident attracted a surprising amount of press coverage and the controversy escalated when the NDP revealed during question period that the dampers were required under the Ontario Building Code.⁴⁷

As the profile of the issue escalated it became a continual source of embarrassment to the Government. Media criticism increased as school boards across the province began to struggle with the issue. Some schools began to close (North Bay, Milton, Harbord Collegiate) and teachers, parents and unions expressed concern about inadequate inspections, risks to children and workers, and the delay of testing results from the Ministry of Labour.⁴⁸

The criticism of the Ministry of Education reached a peak when E.C. Drury School for the Deaf in Milton, operated by the Ministry, was forced to close when members of OPSEU threatened to exercise their right to refuse work under The Occupational Health and Safety Act because of asbestos hazards. During question period, the NDP revealed that complaints by the support staff (OPSEU members) had begun the previous September, but that no action was taken until chunks of asbestos-containing material were literally falling from the ceilings.⁴⁹ Affected classrooms were emptied for repairs and private contractors were called in to encapsulate the material, but the support staff was not cautioned about working in affected areas nor were the students properly protected when the contractors began corrective procedures.⁵⁰

During April "Asbestos" became a daily headline in the newspapers and a continual source of embarrassment to the Conservative Government. Direct political pressure concerning work-related asbestos hazards also increased. Although the schools issue seemed to take priority in the press, the NDP continued to demand that violations of exposure guidelines at Johns-Manville and Certified Brake be immediately addressed.⁵¹

On April 3rd the front page of the Globe and Mail reported "Death of 43 at Johns-Manville tied to asbestos - chemical union."⁵² Asbestos hazards were also reported in other public environments such as the Sick Childrens' Hospital and the Toronto Transit Commission subway system.

The asbestos hazard issue had re-emerged on the political agenda because once again environmental and occupational concerns were forged into a temporary coalition. The political liability of publicly floundering in attempts to deal with the enlarging issue became too great a risk for the Government. In terms of the hypothetical four cases identified in Chapter 1, Case 3 and Case 4 seemed combined into one.

On April 21st, the Minister of Labour, Robert Elgie, relieved the Government from further immediate pressure with the announcement that a three-man Royal Commission would be established to investigate all matters related to health and safety arising from the use of asbestos in Ontario. Elgie assured the Legislature that "The Commission's appointment does not mean that our activities will be suspended or otherwise delayed." The Royal Commission was undoubtedly created in part to achieve short-term political purposes, but it was also created because of growing uncertainty among officials as to how they would in future treat similar potential hazards, particularly in the vast building sector, the so-called "internal environment" which so obviously fell between the jurisdictional stools in the evolving schools asbestos case. In the meantime, a major control program in the schools had been launched.

Issues Arising from the Schools Case Study

Other important aspects of the asbestos in Ontario schools case, especially the later removal and encapsulation program, are examined in a separate study prepared by the authors.⁵³ We will also refer to the schools question in Chapter 3 of this study and in a very detailed analysis of the role of institutions in standard-setting and implementing in the separate study referred to above.⁵⁴ In this chapter we have focused on the early identification stages only. Our intent was to present some of the detailed texture of the identification process, especially the political aspects of it, to complement the more general analysis presented in Chapter 1.

The Asbestos in Schools case illustrates a number of issues which we note briefly in conclusion and to which we will return in later chapters.

The case study provides some evidence to support the hypothesis that hazards perceived to be primarily environmental seem to find a somewhat easier path onto the political agenda than do occupational hazards. Initial momentum for the schools issue came because of concern about its effect on children. The case study, of course, is not a purely environmental one. Indeed, it seems to represent one of those fairly rare occasions in the politics of health and safety where environmental and occupational constituencies were able to form at least a temporary alliance. The deaths of school employees gave the issue its final impetus but seemed insufficient on their own to raise enough political attention.

The schools controversy shows that although the print media was an essential catalyst in sustaining the issue over time, it was not the primary initiator in the political identification process. The initiator role resided with the unions involved. They first applied pressure on the Government and then later through their use of the media and the NDP (in a minority government situation). The existence of strong parental concern also kept up the pressure.

In terms of the technical aspects of the identification process, the case study illustrates the absence of readily available technical information and expertise. For all the institutions involved, the Ministry of Education, the unions, the school boards, the media and parents, there was a need for some kind of domestic institution to which they could turn for basic information and which they could trust. In short, in the technical aspects of identification at least, there did appear to be some need for "one-stop health and safety shopping" to assist all parties involved.

While the asbestos issue is one where hazards have been previously identified both technically (in numerous studies over the decades) and politically (especially in earlier criticism in the 1970s by Stephen Lewis, then the NDP leader), it cannot totally be argued that the schools issue was merely an example of rampant political negligence by political institutions that did not care. The case study shows that the identification of the same hazard over time can indeed involve new elements of identification, both technically and politically. All parties to the issue know and have known for years that asbestos is present in schools and in thousands of public and private buildings. What was not known was the

condition the asbestos was in and whether that produced adverse health effects on different parts of the population. The "internal environment" or the building sector is a relatively new terrain, and there are therefore good reasons for pausing to ask questions about what the schools asbestos issue implies for the identification (and subsequent regulation) of this and other hazards. Given virtually everyone's latent anti-bureaucratic and anti-politician biases, it is always tempting to attribute an inadequate governmental response to a lack of jurisdictional clarity and to inter-agency bureaucratic bungling. But the schools case does raise issues about the entire building sector which were not readily anticipated by any of the public or private institutions involved. If we are seriously to understand the reality of hazardous identification as opposed to the rhetoric of the process, then the schools case shows that even an old (perhaps the oldest) hazard to be identified technically and politically, can, over time, take on new forms, effects and consequences, which have to be "identified" in new ways. This does not mean that negligence is to be tolerated but rather recognizes that new issues can arise. It must surely be instructive to remember that even in the case of the adverse health effects of smoking, where public knowledge is now extensive (in short where the hazard is as identified as a hazard can be), many segments of the population have not changed their behaviour either willingly or sometimes even under regulatory duress.

NOTES TO CHAPTER 2

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2. K.M. Lynch and W.A. Smith, "Pulmonary Asbestosis: Carcinoma of the Lung in Asbestos-Silicosis," American Journal of Cancer 24 (1935): 56-84. E.C. Hammond, I.J. Selikoff and J. Churg, "Neoplasia among insulation workers in the U.S. with special reference to intra-abdominal neoplasia," Annals of the New York Academy of Sciences 132 (1965): 519-25.
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C H A P T E R 3

GIVING HAZARDS A POLITICAL IDENTIFICATION

The analyses in previous chapters make it evident that there are numerous roadblocks on the road to political identification for any particular hazard and for health and safety issues in general.¹ Thus we have seen that there are numerous points along the production cycle where hazards could emerge technically and politically. We have pointed out the existence of both general and particular departmental agendas in which those who benefit from and suffer from particular hazards must jockey for position. We stressed the contradictions between the public perceptions of risk and real risk. The case study of asbestos in Ontario schools showed further some of the difficulties of putting together even a temporary political coalition of those with both environmental and occupational concerns about a particular hazard.

In this chapter we probe a little more deeply into the problems of giving hazards a political identification. We ask again why the process is so haphazard and untidy. To gain further understanding of the political aspects of hazard identification we focus in this chapter on the general role of scientific and technical specialists, the media and politicians. This focus is needed primarily because there has been little published analysis on their roles. Some reference will, of course, be made to the role of business and labour interests in hazard identification in this chapter. However, because a detailed analysis of these important

institutions could not be adequately presented in the more limited context and space constraints of this study, we have placed the major part of our analysis of the labour and business role in the separate study on standard-setting and implementation prepared for the Royal Commission on Asbestos.

The chapter begins with a brief profile of the role of science, scientists and technical personnel in hazard identification. This is because we are interested in how the technical aspects and norms of identification shade into political dispute and controversy. We next examine the role of the media with a special focus on the recent efforts to develop better science journalism. The politician's role is then examined in relation to both the technical advice he or she receives and the critically important pressure that media coverage exerts on politicians, aided and abetted by the government-opposition sparring endemic in parliamentary democratic government.

We emphasize again that our intention in this chapter is to provide a general profile of certain institutions with a view to raising questions about why it is difficult to give hazards a political identification.

Scientists and Technicians

We have already seen in Chapter 1 how advocates of rational risk assessment see this as a process whereby careful scientific and technical work is carried out by scientists and technicians to determine health and environmental effects, and the probability of the risk affecting particular populations.² The focus here is on the slow, objective processes

through which science and technology seeks to establish either causality or at least reasonable probability. This view can be contrasted with the deeply held view of labour unions (and public interest groups) regarding the burden of proof, namely that regulators should assume chemicals (and their producers) are "guilty" until proven innocent (that is, safe). The latter is a call for swift "justice," scientific and otherwise. This is not to imply that labour unions and public interest groups reject the need for more research. Rather, it is to suggest that they start from a fundamentally different premise about the role of research, partly based on their past experience with science and scientists, particularly those they regard as being the "hired guns" of industry.

Published case studies of occupational and environmental health hazards, including those on asbestos, grain dust, radiation and vinyl chloride, bear witness to the constant presence of two kinds of experience about evidence of hazards.³ One kind is found in the rarified level of scientific journals and symposia. A second is found in union halls and work sites or workers' compensation cases. The first kind of experience tends to view the second as being merely a series of 'cases' and hence is not causal evidence. The second kind of experience tends to perceive the first to be remote, foreign and largely subservient to interests other than its own. The bridging of the gap between these two levels of evidence, each of which ought to have a compelling claim to legitimacy, is a major problem to be overcome in the hazard identification (and later regulatory) process. The ignorance of each other's world on the part of the custodian of each of these kinds of experience is enormous.

The growing concern about the regulation of hazardous products and substances in the workplace and in the environment is part of a larger concern about the environment, industrial society and about technology assessment. The logic of the argument is simple and unassailable. The proponents of environmental and technology assessment suggest that contemporary industrial societies must develop a greater collective capability to assess, in advance, the costs, benefits and risks of new technologies, and to understand and control better existing technologies. Where the technology is complex, various suggestions have been made, and some adopted, to improve the technology assessment capability. These suggestions include the creation of offices of technology assessment, special science courts, information screening programs and programs to pre-test chemicals.

Central to this question is the issue of the independence and/or the appearance of independence of the research, and the freedom or ease with which the knowledge is traded and communicated, especially to those at risk. Scientists tend to think of research as a search of causal knowledge and as an input to government and other decision-making processes. This characterization of research is frequently accurate. Research, however, is also an output and a political and economic weapon. One frequently duplicates research precisely because one agency distrusts, or cannot be seen to be excessively trusting and deferring to research done by others. To study a problem or to seek more knowledge is frequently a middle-of-the-road alternative between doing nothing and taking more vigorous action.

In many areas of the regulation of hazards lack of research or causal knowledge is not the main problem. A very normal conflict emerges in this regard. Scientists, for example, are naturally and necessarily careful about the statements they make about causal knowledge. They have a more cautious sense of "evidence" about standards of exposure limits for example. They are likely to advocate, therefore, that the standards be viewed as "guidelines" and that more research needs to be done. Economic interests with a self-interest in loose standards will exploit this argument and use it to justify more relaxed standards or to postpone action until more conclusive "cause-and-effect" evidence is produced. Unions and others who must seek more precise administrative and legal criteria of evidence will opt for legislated precise standards.

As pointed out in Chapter 1, the technical aspects of hazard identification do embrace numerous types of problems. Technical debate can focus not only on general causality but also on whether a hazard is present and can be measured, whether there are natural background levels, whether the dose-response relationships are linear or assume other configurations, and whether there is possible multiple causality. These are important questions which each raise different problems of identification. Many interest groups, even where they recognize the importance of research and the need for precision and the application of objective scientific method, have little patience for these fine distinctions in technical identification. This fact alone complicates and politicizes the identification process.

The flow of science in the hazard identification process is also closely tied to the role and use made of international and foreign technical and standard-setting bodies. The case study of asbestos in Ontario schools confirms the extensive degree to which international and foreign technical and standard-setting bodies have been relied upon by Canadian regulators both in identifying hazards and in dealing with them. In contrast, case studies of radiation show how Canadian regulators at times ignored studies from abroad without explanation.⁴ Over half of the science journalists interviewed for this study (see next section) indicated a strong preference to rely on foreign, particularly U.S., agencies for information (partly because of the greater ease of access under the U.S. Freedom of Information legislation) rather than Canadian agencies. In Chapter 4 we will examine the importance of the international flow of data for the pre-testing of chemicals.

It is obviously important that Canadian institutions utilize the knowledge and expertise of international and foreign organizations involved in occupational and environmental health. International standard-setting bodies like the International Committee on Radiological Protection (ICRP) and the American Conference of Governmental Industrial Hygienists (ACGIH) are invaluable sources of expertise and advice. Canadian involvement with other international research and advisory bodies, such as the International Labour Organization (ILO), the World Health Organization (WHO), the Organization for European Co-operation and Development (OECD), and the International Atomic Energy Agency (IAEA), is also immensely valuable.

Canadian agencies have also benefitted from close day-to-day professional contacts and exchange with their counterparts in the United States, particularly the Environmental Protection Agency (EPA), the National Institute of Occupational Safety and Health (NIOSH), the Occupational Safety and Health Administration (OSHA), and the Consumer Product Safety Commission. The considerably greater American resources and Canada's proximity to the United States confer a considerable advantage.

No one would argue that these international and foreign resources should not be utilized, but it is also important to point out the dangers that can occur if Canadian regulatory authorities depend on them excessively. It is very easy for a sense of deference to develop. Standards developed in an international arena are frequently subject to the wider tradeoffs and compromises that may develop not only out of scientific controversy but also out of the differing views of producer and consumer countries. There is also a sense in which this deference and dependence can become, in effect, a form of "beggar-my-neighbour" policy by which we simply wait for hazards to occur elsewhere. Moreover, excessive deference will cause Canadian authorities to be less aware of problems that are indigenous to Canada.

The Media

Among the major institutions involved in identifying hazards, the media (print, radio and television) evoke the strongest views among the major participants. There seems to be a strong underlying view that the media is the main agenda-setter. This view is often expressed both with

regard to general political priorities⁵ (what influentials in Ottawa often call "government by Globe and Mail") and to the hazardous substances agenda. In the field of health and safety risks, nothing causes the hair of businessmen, regulators, and even scientists to stand up in righteous protest more quickly than a front page headline asserting that substance X is "linked" to cancer, much like water is "linked" to drowning. Senior regulatory officials will often at least privately protest against the way media stories require them to discard their normal tasks and priorities to chase down or "firefight" the latest hazard. This so-called "hazard of the week" syndrome obviously affects different "health and safety" departments of government⁶ in different ways but the perception of its existence and of the media's role in perpetuating it is very real.

Because of the presence of these views, we undertook to examine the role of the media in the identification process in somewhat greater detail. In this section we draw upon a variety of sources including the case studies, a detailed look at the Ontario Asbestos in Schools case (see Chapter 3), confidential interviews with ten practising science reporters (in print, radio and television journalism) as well as data from surveys of science writing in Canada carried out in 1981 by Lydia Dotto and Harold Schiff and in 1973-74 by the federal Ministry of State for Science and Technology (MOSST).⁷ These sources do not allow us a complete view of the media's role nor enable us to distinguish the more subtle differences in role between newspapers, radio, television, and magazines. They do, however, allow us to go at least one step beyond purely intuitive views about the media's role and its future capacity in the hazard identification process.

It is first necessary to appreciate that the media (with the partial exception of the CBC) comprises first and foremost businesses intent on earning a reasonable profit.⁸ Profitability is tied to the ability to attract advertisers and this in turn depends on giving readers what they think they want to read about. Hence, newsworthiness and timeliness are central working rules. Their corollaries are often a short attention span for any single issue and a rapid boredom threshold by both reporters and readers alike.

At the same time, the media is influenced by the formal and informal rules and norms of professional journalism. Thus there is normative concern about fairness and accuracy in reporting, presenting all sides of the issue, and acting as a check on, and critic of, government and the realms of private power as well. Sometimes these norms and the profit motive conflict with each other. For the practising journalist there are, in addition, the day-to-day concerns of finding information, obtaining, cultivating and maintaining sources they can reasonably trust, finding a good story, securing credit for a good story (preferably on page one) and "doing a good conscientious job."

The tug and pull between the media as a business and journalism as a profession undoubtedly affects, for good and for ill, the media's role in the identification of hazards. The media is not alone, however, among major institutions, in having to balance or otherwise resolve internal contradictions. Our brief discussion of the media's role must be placed in this broader institutional context. We will first review some general background characteristics, especially of the state of science reporting (the title under which health, safety and risk items are generally classified) in Canada. Next, we report on the interviews conducted with ten practising science journalists. Finally, we discuss several other issues important to a more complete understanding of the media's role.

The Dotto-Schiff survey provides some useful general background data (including comparisons with the earlier MOSST study) on the state of science coverage in the media. It surveys daily and weekly newspapers and magazines. Due to limited space, we focus on the daily newspaper sector. The major findings of the survey of interest to us are:

- Three-quarters of the respondents wanted more science material. All of the mid-sized papers wanted more.
- Sixty percent said they would definitely, or very likely, use a Canadian science news service; 30% said they were unlikely to, or definitely would not, use the service.
- Almost all the large papers and two-thirds of the smaller papers run regular science sections, pages or columns.
- More than two-thirds have staff science writers and nearly half have science editors.
- Papers that do not have staff science writers gave financial considerations as their main reason; very few thought that general staff reporters could handle the material adequately.
- Three-quarters use wire services for science material; two-thirds were satisfied with the quantity but only a little more than half thought the quality was satisfactory.
- The respondents perceived the interest of their readers to be mainly in the areas of life sciences/medicine, energy, environment and agriculture. They gave science education the lowest rating here.
- In terms of the approach or "angle" used in science stories, social and economic implications were ranked highest. Canadian content was of middling importance, and regulatory/political aspects were ranked lowest.⁹

At a somewhat more detailed level the Dotto-Schiff study concluded:

- Most dailies (84%) run some form of regular science coverage; a few run daily pages and/or weekly sections. Ninety-two of the large dailies said they run regular science material, while three-quarters of the mid-sized and small papers said they did.

- The average space in the papers devoted to science is estimated to be less than 5% by 45% of the papers, and between 5% and 10% by 40% of the papers. Not surprisingly, the large papers run a higher percentage than smaller papers. The length of science articles is generally between 500 and 1000 words (53%) although 8% said their typical articles are longer than 2000 words.
- Nearly half of the responding dailies have science editors and more than two-thirds have designated science reporters - mostly in the areas of life/medical science, environment, agriculture and energy. Ninety-two percent of the large papers said they have science editors or reporters, while only half the mid-sized and small papers have them. A larger fraction of the papers with science editors or writers were located in Ontario and Quebec than in the West or in the Maritimes.
- Those that do not have designated reporters gave economic considerations as the main reason (they can't afford the staff or the wire services are cheaper). The next most important reason was that they weren't running enough science material to warrant a science reporter. The failure to appoint science writers was not because the respondents thought that other staff writers can or do adequately cover science; in fact, 13% said they are actively looking for science writers.
- Three-quarters of respondents said they use wire services for science material. The large papers are the major users; only 63% of the smaller papers said they use these services.
- Nearly half of all respondents said they use mainly Canadian services and 40% use Canadian and U.S. material about equally. Papers in Central Canada use more U.S. wire copy than papers in the West and the Maritimes. About two-thirds of all the respondents said they were satisfied with the amount of science material available from the wires, but less than 60% were satisfied with the quality of this material.
- The main reasons given for not using wire service material were: insufficient news value, not enough background material, and material too technical.

- Greatest interest was expressed in the areas of life/medicine, energy, environmental, and agriculture in that order; and least in science education and transportation technology. It is worth noting that the favoured areas are the ones having the largest number of designated reporters.
- The newspapers were asked to assess the importance of various kinds of emphasis in science stories. Following is a statistical breakdown of the factors considered "very important" by the respondents: Human interest (89%); social-economic implications (80%); Canadian content (44%); straightforward descriptions of research projects (44%); innovations/futuristic aspects (33%); and regulatory/political (31%).¹⁰

To obtain some sense of the level and direction of change in the 1970s, the Dotto-Schiff study compared some of their findings with the 1973-74 MOSST study. They concluded:

- There has been an increase of a factor of two in the number of assigned science writers and an increase of a factor of four in the number of science editors since the MOSST study was done.
- There was a significant increase in the number of reporters covering energy.
- The subject of energy was assessed to be much more important to readers than it had been in the MOSST study. Medicine ranked high in both studies. Agriculture and social sciences received much higher ranking than previously, while science education received a much lower ranking.
- Financial considerations became the dominant reason for failure to appoint science writers. There was a decrease in the number of editors who believed science could be covered adequately by other staff writers.
- Three-quarters of respondents in the current survey indicated they wanted more science material. In contrast, 90% of respondents to the MOSST study said they did not anticipate increasing their use of science material in the next year.

- There has been little change in the newspapers' assessment of Canadian wire service science articles. Most were satisfied with the quantity, but less than half were satisfied with the quality.¹¹

The Dotto-Schiff survey does not tell us much about the background training and experience of science writers. First, it is sometimes difficult to classify them since they can appear in such reporting sectors or "beats" as medicine, environment, energy, labour, health, or education. Given the rapid growth in number of science writers since 1975, it follows that most have only limited experience. For example, among the ten interviewed by the authors for this study, the average was six years of experience but the range was from three to eighteen years. Within their "science" coverage, three of the reporters estimated that they spent a major part of their time on "health and safety or risk issues"; two estimated a moderate amount of time; and three a low portion of their time. Health and safety issues were defined to exclude coverage of such things as space flights, conventions on medicare, strikes, oil pricing agreements or other important items that might be part of a regular medicine, energy, or other beat.

It is obvious that it is difficult to find, create or train the ideal science writer (much less the ideal science editor); that is, someone who is literate about science and scientific methods and who can write for a general audience. There have been efforts to formalize a science writing profession. A Canadian Science Writers' Association has been formed. Its membership in 1979 was 67, half of whom were active science journalists. In 1981 there were 300 members, half of them working journalists.¹²

Lydia Dotto, one of Canada's most respected science writers and President of the Canadian Science Writers' Association, has succinctly drawn attention to one obstacle in the way of improving the quality of science writing, namely the antagonism between science writers and scientists:

There are many explanations for the antagonism. The media's lack of scientific sophistication and seeming unwillingness to do an adequate amount of homework, coupled (sometimes) with a penchant for naive sensationalism, has been a major sore point with scientists - and rightly so. But I believe this situation is changing rapidly as more full-time reporters are assigned and are being given the time and resources to do their jobs properly.

(I might add that awards like those offered by the Canadian Science Writers' Association and the National Magazine Awards provide some incentive, both financial and professional, for quality work.)

I am not sure, however, that scientists and journalists can ever completely resolve their philosophical differences about media coverage of science. I suspect researchers will always find the pace of journalism anathema (it's been my experience that many do not even begin to comprehend how fast-paced it really is and are even more appalled when they find out).

Moreover, many scientists continue to have difficulty with the very concept of popularization. This fosters what I believe to be one of the major stumbling blocks to good media science writing - that is, the strong peer pressure exerted by the scientific community against their members who are deemed to be too obviously consorting with the media. The problem is not as bad as it used to be even five or ten years ago, but it still exists.

The disparagements take various forms, subtle and unsubtle. I know of one case in which a scientist who wrote an article for a newspaper was asked when he'd given up science and taken up plagiarism. I know of other cases in which some scientists seemed to feel a strong need to dismiss the scientific competence of

colleagues who indulged in popular writing (else why would they waste their time with this second-class activity?) - and were quite put out when they were unable to do so.

In fact, it still takes a certain amount of courage and a strong sense of confidence in the quality of his or her scientific work for a scientist to take an active role in promoting public knowledge about science. It's clear that many researchers don't feel it's worth the effort of swimming against the tide.¹³

How, or on what criteria, do science reporters covering the health and safety issue select which hazards to write about? Only a preliminary and highly tentative glimpse into this murky and highly subjective world of the journalist's work can be gleaned from our interviews with ten journalists. When asked in a general way what criteria they used to select hazards only three gave obvious priority to the sheer number of persons involved in a given hazard. This would lend some weight to the proposition that environmental hazards are more easily identified on the political agenda.¹⁴ Others gave prominence to a host of other criteria, including the presence of death, whether the hazard was "new and abnormal," the appearance of a story on the hazard in another newspaper or television station, the likelihood that a law was being broken, the prod- ding of an interest group, the involvement of children, and hazards with an obvious immediate threat (e.g., the Mississauga train wreck).

The journalists interviewed also expressed the virtually unanimous view that the initiative for suggesting stories was theirs rather than that of their editors or supervisors. The latter, however, obviously re- tained considerable discretion as to whether a story on a hazard was on page one or buried in the back pages.

Among the sixteen case studies, the media was viewed by the authors of the case studies to be a significant factor in most cases, though the authors rarely are specific in indicating the media's role in the identification process per se. In only two cases, oxides of nitrogen and grain dust, was the media role a minimum one.

A further glimpse into the media's coverage of hazards and risks can be gleaned from other questions asked in the interviews about the preparation and coverage of stories. On average for daily stories, journalists have about two or three days preparation time. For the far less frequent feature articles or series (an even rarer event), two or three weeks would be available. Journalists do not have research assistants. On average, for the daily story, they have time to consult three or four experts or officials. The science journalist's work is not, however, totally episodic or composed entirely of an endless series of one shot efforts. A learning curve exists particularly where certain hazards (e.g., asbestos, radiation) re-appear on the agenda over a period of months or even years.

That there are inherently severe limits to the science writer's capacity to write about hazards is obvious. All of the journalists interviewed recognized this quite candidly. At the same time, however, they revealed, not unexpectedly, some of the internal contradictions of their trade. For example, when asked to rank which institution or sector they trusted most and least for information about hazards, six ranked university scientists as the most trustworthy and six ranked business as the least trustworthy. When asked, however, about their view of the most important role of the media respecting hazards, six cited balanced and fair coverage; two cited their duty to give voice to the powerless groups in society; and one cited the need to avoid frightening the population about hazards that were not hazards.

With respect to improving society's capacity to identify and deal with hazards and risks in the future, six of the science writers identified more research as the greatest need while three placed primary emphasis on the need for tougher enforcement of laws and regulations. None of the journalists had suggestions for the hazards that should be on a government's future priority list, nor how one should go about ranking them.

While the foregoing sources of data and insight into the media's role are disparate and not always focused on hazard identification per se, they allow us to make certain observations about the media. First, the media undoubtedly plays an important role in giving hazards a political identity, though not necessarily in any scientific risk assessment sense of the word "identification." There appears to be a preference for identifying environmental hazards, though perhaps not an overwhelming one since strong media interest in portraying "the human dimension" is an antedote to the "sheer numbers" criteria for identifying hazards.

It can be said, however, that occupational health issues do not seem to be generally a priority of labour reporters, who tend to focus on traditional labour relations and employment issues. It could well be that the political weakness in identifying occupational hazards is partly a product of this weakness in science and labour journalism.

At the same time, one must note that there are cases of hazard identification (vinyl chloride and grain dust) where media involvement was extremely limited and yet the case got on the political agenda without apparent difficulty.¹⁵

Second, there is reason to believe that the quantity and quality of science reporting has improved and that further improvement is possible (and necessary). Journalists recognize the need for independent centres where accessible data and information on hazards can be obtained by them and by other Canadian citizens and interests.

Finally, however, it is extremely doubtful that these past mixed patterns of media involvement often characterized by the "hazard of the week" syndrome referred to earlier will change much in the future. This is because hazards are news, and there are many potential hazards. There will always, moreover, continue to be a never-ending state of (usually) healthy tension between a free press and the exercise of public and private power.

Politicians

It is said that votes are to the politician what profits are to the businessman. A corollary of the above adage is that politicians, especially those whose party has a chance of gaining or retaining power, pay particular attention to marginal voters in key electoral constituencies. To a certain extent these propositions are true, though they by no means capture the role of elected politicians in the hazard identification process. They may, however, help explain why, in recent years, despite heightened environmental consciousness, the issue of hazardous and toxic substances has not been a top priority, at least not when compared to other "bread and butter" economic issues. We have already pointed out in Chapter 1 that getting this subject on the political agenda has been difficult. The difficulties are compounded when it comes to achieving success in placing a particular hazard on the agenda.

But politics and priority-setting are not as elegantly simple as the voter calculus model would have us believe. We have seen in the Asbestos in Schools case in Ontario how labour union pressure, operating through NDP legislative persistence and media support, in the context of a minority government, triggered concern over the environmental hazards but not necessarily over the occupational hazards of asbestos.

Several of the case studies listed in Chapter 1 (including those on asbestos, radiation, mercury and lead) reflect the critical role in the hazard identification process played in the mid 1970s by then NDP leader Stephen Lewis. There is little doubt that Lewis acted out of passionate and deeply held belief in the injustice of many occupational health policies and practices. There can also be no doubt that the NDP as a political party has given these issues a far higher priority within its stated policies than have the Progressive Conservatives or the Liberals. This partly reflects the NDP's closer association with organized labour.

Despite this, there is very little evidence that even the NDP, which has made this its issue, has given much thought as to how to break away from the hazard-by-hazard approach.

It must be stressed that politicians in government face somewhat different constraints than those in opposition and this affects their response to hazard identification and to the general issue of hazardous substances. First, ministers function in the highly partisan and adversary context of parliamentary government. This is a system which makes it difficult for ministers to politically admit that all is not well and that one's critics might have a valid argument. This adversarial climate extends to the media as well. Second, ministers directly involved must

consider not only their own statutory and political responsibilities as individual ministers (the doctrine of ministerial responsibility) but also its corollary, the collective responsibility of all ministers as a government. Ministers do talk to each other frequently and they talk with other members of their party's legislative caucus. They are subject to pressures which vary from concerns about major substantive policies, to issues such as "keeping the government out of embarrassing trouble" (such as might arise over a particular hazard).

Ministers seem to worry a great deal about media pressure because they know it is visible, and moreover, is closely linked to the legislative question period, the bearpit of parliamentary politics. The importance of the media is reinforced by the concerns of their senior officials who are often the persons whom journalists call for information and statements.

Ministers also have to deal with the reality of finite financial and personnel resources, listen to the often uncertain technical advice of their civil servants, obey existing laws, and respond to external pressure as well. It is little wonder that they view themselves as being "in the middle" rather than "in charge." The case studies testify to their cautious, ambivalent view of hazards. Journalists tend to view them as vacilating and lacking in candor. For some groups involved, political virtue lies in banning a product's use. For others, it is the need for more careful study. It is difficult to be, or even to look, decisive under these circumstances.

Politicians undoubtedly need experts to tell them what the risks are and the probability of the risks occurring. But they are essentially on their own when it comes to ranking risks politically, and determining what is an acceptable risk. The latter two functions are political by definition and hence ministers and other politicians will be and should be the ultimate decision makers despite the obviously uncomfortable nature of the position.

Economic Interests

Scientists, politicians and the media obviously do not function in a vacuum separate from the influence of economic interests, especially labour and business. The relationships among these institutions are indeed complex and multi-faceted. We have reserved our detailed discussion of the labour and business role for a separate study on standard-setting and implementation. In this section we will simply note the expressed or apparent issues in hazard identification which are important to these interests. The second study will show how these are linked to subsequent standard-setting action or inaction and to implementation in the field of occupational and environmental health and safety.¹⁶

In the case study of Asbestos in Ontario Schools labour unions were the principal initiator in the hazard identification process. Ontario unions were legitimately angered by the fact that it took the schools issue and concern about children to put asbestos on the public agenda despite union efforts over many years to obtain action regarding the proven workplace hazards of asbestos.

However, despite their growing experience in, and awareness of, the problems of identifying hazards, most of the unions did not deal in any detail in their written submissions to the Royal Commission on Asbestos with the kind of future processes needed for hazard identification. The Ontario Federation of Labour's submission calls for an independent agency to supervise the testing of all substances entering the workplace.¹⁷ It also wants a carcinogens policy to be adopted but stops short of endorsing the American OSHA Cancer Policy¹⁸ (see Chapter 4).

Virtually all of the labour unions did emphasize one principle which is an essential issue in hazard identification, namely the issue of where the burden of proof lies in showing a hazard to be toxic or carcinogenic. For example, the submission filed by the Labour Council of Metropolitan Toronto stressed that:

It is important to recognize that the push for further studies, while it may be based on a scientific impulse to seek "truth," it is also based on a conceptual framework that considers chemicals safe until they have been proven to be harmful. It is a basic tenet of our system - innocent until proven guilty. Therefore, proof, irrefutable proof, is required before asbestos and those who profit from it can be penalized. Penalty in this instance is further control or a ban on asbestos with the corresponding loss of profitability. The premise that "innocent until proven guilty" should apply to chemicals as well as people is nonsense. People are treated in this way because our society, at least in theory, believes that it is better for the guilty to go free than it is for the innocent to be punished. We believe this presumably because the consequences of a mistake are, on balance, worse, if for example, an innocent woman was executed because of an error in the judicial system than a guilty man be set free through a similar error. With chemicals the situation is clearly reversed. On balance it is infinitely better for chemicals to be banned until they are proven safe for any particular use.¹⁹

Unions also tend to oppose formalized cost-benefit or risk-benefit analysis as an element of hazard identification because of the philosophical premise in these concepts that health is bargainable, and that human life can be valued in some numerate way. Labour fundamentally opposes cost-benefit analysis, a concept which business often supports as the central element of regulatory reform.²⁰

Labour's views, as well as the views of all major institutions, are influenced by other matters on the political agenda at any given point in time. For example, labour unions too must rank the priority they place on occupational health as opposed to other issues (recognition and involvement in central decision processes; unemployment; training; the general state of collective bargaining; and technological change). All of these affect their relations with business, government, and society and will undoubtedly influence the views taken of future hazard identification processes. At present labour regards past and current practices on several particular hazards (including asbestos) as being wholly inadequate and irresponsible and hence in this sense has little patience for grand designs about future hazard identification mechanisms.

Among economic interests, business usually has the strongest incentive to postpone or stall the conclusive identification of a hazard. This was reflected at a general level in the strong opposition of the chemical industry in Canada and the United States to legislation on the pre-testing of chemicals passed in the mid-1970s.²¹ It is also reflected in case studies of particular hazards such as lead, asbestos, mercury and radiation.²² Individually, many senior corporate managers

often privately recognize that environmental and occupational hazards are a generic problem and that industrial societies must be less ad hoc in identifying them. They will thus support the general need for more and better research, and the need to be "less emotional" and more objective about hazards. At the same time, institutionally, business leaders will usually be reluctant to publicly acknowledge the need for better hazard identification processes because this inherently implies more state intervention, and may even imply some kind of state "planning." In the last few years this has been merely one part of a larger opposition by business to more regulation, especially so-called social regulation.²³

This helps explain why the written submissions from industry to the Royal Commission on Asbestos do not reveal a general call for better processes of hazard identification.²⁴

It can thus be further appreciated on the basis of this brief profile of the role of selected institutions in hazard identification that there are numerous obstacles on the road to giving hazards a political identification. We have focused here particularly on the role of scientists, the media, and politicians as opposed to the role of other economic interests because existing published analyses have not dealt with them adequately. Such profiles are necessary not to justify or apologize for all the evident 'ad-hocery' of current processes but rather to isolate further specific issues which are important for future reform.

These issues include again the need to appreciate the several technical dimensions of identifying hazards as distinguished by scientists, versus the concerns of labour about the question of burden of proof and the use of cost-benefit and risk analysis; the weaknesses in media cover-

age of hazards and in science journalism and labour reporting; and the ambivalence of politicians caught in the cross-fire of adversary legislative and media politics; the pressures for interdepartmental accommodation and compromise; and the conflicting demands of business and labour.

NOTES TO CHAPTER 3

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2. Science Council of Canada, Policies and Poisons, Report No. 28 (Ottawa: Supply and Services Canada, 1977).
3. See G. Bruce Doern, Regulatory Processes and Jurisdictional Issues in the Regulation of Hazardous Products in Canada, Background Study No. 41 (Ottawa: Science Council of Canada, 1977).
4. See G. Bruce Doern, "Science and Technology in the Nuclear Regulatory Process: The Case of Canadian Uranium Mines," Canadian Public Administration 21: 1 (Spring 1978): 51-82.
5. See Douglas Hartle, Policy, Regulation and Decision Making (Montreal: Institute for Research on Public Policy, 1979).
6. See Doern, The Peripheral Nature of Scientific and Technological Controversy in Federal Policy Formation, Background Study No. 46 (Ottawa: Science Council of Canada, 1981), Chapter 3.
7. L. Dotto and H. Schiff, "Science News Syndication Service Market Survey." Prepared for Social Science and Humanities Research Council (Ottawa: March 1981).
8. See Senate of Canada, Report on the Mass Media (Ottawa: Supply and Services Canada, 1973).
9. Dotto and Schiff, op. cit. note 7, at p. 2.

10. Ibid., pp. 19-20.
11. Ibid., pp. 21-22.
12. L. Dotto, "The Role of the Media in Society's Support for Science," (Paper presented at Canadian Student Pugwash Conference, Carleton University, Ottawa, 12 June 1981), p. 1.
13. Ibid., pp. 3-4.
14. See Chapter 5.
15. See G. Bruce Doern, Regulatory Processes and Jurisdictional Issues in the Regulation of Hazardous Products in Canada, Chapter 4, and G. Bruce Doern and John Kowalsky, The Grain Dust Case (Toronto: Institute of Public Administration of Canada, 1979).
16. See G. Bruce Doern, Michael Prince and Garth McNaughton, Living with Contradictions: Health and Safety Regulation and Implementation in Ontario, Study No. 5 prepared for the Royal Commission on Asbestos (Toronto: The Commission, 1982).
17. Ontario Federation of Labour, Written submission to the Royal Commission on Asbestos, #35, January 1981, p. 126.
18. Ibid., p. 126.
19. Labour Council of Metropolitan Toronto, Written submission to the Royal Commission on Asbestos, #13, January 1981, pp. 9-10.
20. G. Bruce Doern, Rationalizing the Regulatory Decision-Making Process: The Prospects for Reform, Regulation Reference, Working Paper No. 2 (Ottawa: Economic Council of Canada, 1979).

21. See Gerard A. Rohlich and Richard Howe, The Toxic Substances Control Act: Overview and Evaluation, Regulation Reference, Working Paper No. 21, (Ottawa: Economic Council of Canada, 1981) and P. Nemetz et al. Regulation of Toxic Chemicals in the Environment, Regulation Reference, Working Paper No. 20 (Ottawa: Economic Council of Canada, 1981).
22. See G. Bruce Doern, Regulatory Processes and Jurisdictional Issues in the Regulation of Hazardous Products in Canada, passim.
23. See Economic Council of Canada, Responsible Regulation (Ottawa: Supply and Services Canada, 1980) and Economic Council of Canada, Reforming Regulation (Ottawa: Supply and Services Canada, 1981).
24. Again, for more detailed analysis, see G. Bruce Doern, Michael Prince, Garth McNaughton, op. cit. note 16.

C H A P T E R 4

RECENT EFFORTS TO BE MORE SYSTEMATIC IN IDENTIFYING HAZARDS

For those who covet rationality as an article of faith, the evidence in previous chapters of how hazards have been identified in the past is infuriatingly untidy. However, despite the episodic nature of the risk agenda, governments have begun to search for ways in which they might be more systematic. They have begun to ask how they can begin to set priorities in this field so as to distinguish critical hazards from other hazards. Needless to say, it is a necessary, though difficult and perhaps thankless task. Public authorities find themselves caught between two irresistible pressures. They are damned if they do not respond to ad hoc single cases, and they are chastized if they do not plan. As always these pressures pull public officials in two directions at the same time.

The purpose of this chapter is to review the recent efforts to be more systematic in this field of public policy. We survey recent developments at the international level, in the United States, in the Canadian federal government and in Ontario. The chapter is primarily descriptive in nature. We reserve our critical analysis of these efforts for Chapter 5 when we examine objectives and institutions for better hazard identification, a task which necessarily requires us to explore the problems of being rational.

Before we present the descriptive survey it is useful to try to envisage what an ideal hazard identification process might look like. This will help us recapitulate the problems to be faced by governments and other institutions which we have identified in earlier chapters. First it is essential that any future system include a maximum amount of free exchange of data among countries since hazards do not obey national boundaries. Second, within Canada both public and private institutions must be fully involved since there are many points in the production cycle and in the marketplace where better early warnings could be given both technically and politically. For example, in Chapter 2, the first of the four hypothetical examples of identification cited involved the role of the insurance industry. We have not examined the insurance industry in any detail but it is not difficult to envisage that the industry could play a more systematic and central role in this process. The insurance industry is by definition primarily involved in assessing risks of all kinds on an ongoing basis. Its potential role deserves more detailed study.

A third feature of an ideal system must be a capacity to focus the technical aspects of risk assessment on a single independent institution that deals with both workplace and environmental hazards. We have stressed in earlier chapters that "one-stop shopping" is not feasible at the actual regulation stage since there are good reasons why several departments are involved in health and safety issues. A much stronger case exists, however, to try to achieve "one-stop shopping" at the early technical hazard identification stage where, as we will see, there is an important institutional vacuum in Canada.

As the following inventory of recent developments is presented, it is important to keep these features in mind. We will discuss them again in Chapter 5.

OECD PROPOSALS AND THE INTERNATIONAL FLOW OF TESTING AND SCIENTIFIC DATA

Because commerce is international, the identification (and subsequent regulation) of hazardous substances has always been heavily dependent upon the need for the international flow of research data and other information. It is also affected by the competitiveness of international trade, the internal flow of information within multi-national corporations and the desire to protect commercial secrets regarding new products. Increasingly, health and safety standards have come to be viewed as a potential "non-tariff" trade barrier.

At the international level there has been a significant range of contact between major groups involved in health and safety issues. These include analogous regulatory authorities (particularly between Canadian and American regulators), labour unions and public interest groups in both countries, scientific, medical and professional associations and their scholarly journals, corporations and the media. Needless to say, there has been both co-operation and conflict in the exchange of data and views.

It is quite clear that international co-operation of some significant kind is essential both in setting the agenda for dealing with hazards, and for regulating them. The Organization for Economic Co-operation and Development (OECD) is on the verge of reaching agreement to enhance the prospects for such co-operation. The agreement deals with work

on the control of chemicals, a 300 billion dollar industry. In terms of volume of trade within OECD countries, chemicals constitute a 50 billion dollar trade item.¹ Since 1969, ten OECD countries have introduced legislation to provide for general controls on chemicals and an additional six countries are considering it.² The purpose of such legislation is to control new chemicals, pre-testing them to determine their health and environmental effects. Such testing is very costly and many states cannot afford to duplicate testing. The scarcity of adequate testing resources also applies to lower level governments within the OECD states that are federations (including the dependence of Canadian provincial environment ministries on the federal government and the relative dependence of the latter on the United States Environmental Protection Agency and so on).

The OECD's work on chemicals began in 1978 at a special Stockholm meeting. Five expert groups were created to develop some one-hundred test guidelines in such fields as physical chemistry, degradation and accumulation, short and long term toxicology, eco-toxicology and principles of good laboratory practice. The main issues agreed to at the meeting among high level OECD officials and ministers on May 21st, 1980 (to be sent to the Council of the 24-member OECD for adoption later in 1981) were:

- Mutual Acceptance of Data;
- OECD Test Guidelines;
- OECD Principles of Good Laboratory Practice; and
- Minimum pre-marketing set of data.

The official OECD statement concluded:

Decisions taken at the meeting, when applied by Member countries, will ensure that data generated in one country for the assessment of a chemical will be accepted in another OECD country. In arriving at this, the meeting focused on a number of key issues:

- the principle of Mutual Acceptance of Data for the testing of chemicals. It was decided that data could be assured as internationally acceptable if specified guidelines for tests and standards for laboratory practice were followed;
- OECD Test Guidelines for testing chemicals for health and environmental effects and OECD Principles of Good Laboratory Practice to ensure that testing is carried out under appropriate conditions. Together these are necessary to ensure the acceptability of test data for purposes of assessment. Since this is an area where scientific knowledge is changing the meeting also provided for the updating of these Guidelines;
- a minimum package of data - OECD Minimum Pre-marketing set of Data (MPD) - necessary to perform a first meaningful assessment of a chemical before it enters the market. There was agreement that the MPD should be applied with flexibility.

Member countries at the meeting reaffirmed their commitment to continuing efforts towards harmonization of chemicals control. They considered how governments could exchange data which were necessary to assess chemicals while at the same time safeguarding the commercial interests of the firms which had done the testing. They also noted the need for policies which did not impact unduly on chemical industry and trade.³

There can be little doubt that the major elements of the OECD package are a necessary part of any future effort to identify hazards. There are, however, severe limitations to this effort. The effort is directed at new chemicals although mutual acceptance of data and other provisions could also affect testing of the enormous stock of over 50,000 existing

chemicals in world commerce. There are, however, numerous unresolved issues over how one safeguards commercial interests. Finally, there will no doubt be problems in ensuring that there is compliance with these practices in member countries despite the apparent agreement with the principles.

At time of writing the package has not been formally adopted by the OECD Council. Some provisions in the package are being criticized by the Reagan Administration in Washington. It should be noted as well that the OECD proposals do not directly address the question of setting or recommending priorities for the identification of hazards (chemical or otherwise).

THE UNITED STATES: EPA AND OSHA

Two recent efforts in the United States particularly illustrate both the need for, and the difficulty in setting, priorities for hazard identification. We will very briefly review the Environmental Protection Agency's processes for identifying hazards and the so-called "Cancer Policy" of the Occupational Health and Safety Administration (OSHA). At the outset it is important to stress that the former effort deals nominally only with toxic chemicals in the environment while the latter is directed primarily at carcinogenic hazards in the workplace. Thus, once again not all hazards or risks are subject to these priority setting concepts and exercises. At the same time it is important to note that the environment, workplace and internal environment (buildings) jurisdictional categories are not water tight. EPA, for example, can influence workplace

issues particularly when it suggests that a given new product be subject to certain kinds of labelling or other related requirements. With respect to the internal environment, as we saw in Chapter 2, EPA became involved in the asbestos in schools issue in the United States.

EPA and the Toxic Substances Control Act

The United States Toxic Substances Control Act (TSCA) of 1976 confers upon the Environmental Protection Agency the authority to identify and control harmful chemicals, both those already in existence and new chemical substances before they are manufactured and introduced into the market place.⁴ TSCA requires industry to provide information about the distribution, use, exposure, health and environmental effects of chemicals. It also requires industry to test potentially harmful chemicals for health and environmental effects.

In its information gathering role, EPA has published a Chemical Substance Initial Inventory and subsequent supplement. It contains over 55,000 chemical substances reported by 7,700 companies.⁵ To acquire more detailed information, EPA has proposed a rule to require manufacturers to submit basic information on how, and to what extent, people and the environment are exposed to 2,200 chemicals, many among the largest volume substances. A further rule requires companies to submit unpublished studies on sixty-one chemicals and categories including asbestos, benzidine-based dyes, styrene, dioxines, and chemicals used as solvents.

With respect to new chemical substances EPA has to date received and evaluated about 400 notices on substances produced by about 100 companies.⁶ These pre-manufacture notices (PMN's) have provided useful

data on the toxicity of individual compounds. As a result a number of firms have voluntarily altered or discontinued production, distribution or specific use patterns of chemicals identified. Others have developed special product warning labels, reduced or eliminated worker and environmental exposure problems, and strengthened internal employee health surveillance and safety enforcement programs.

EPA has also proposed a rule to require employers who manufacture, process or distribute chemical substances or mixtures to maintain records of allegations by employees or others in which it is claimed that a chemical or mixture has caused adverse health effects. Information submitted by employees must be kept for 30 years and by consumers for five years. Industries would report these allegations to EPA upon request.⁷

While many features of TSCA are of interest in the total spectrum of activities involved in regulating hazardous substances we are primarily interested in the hazard identification processes of EPA under the act.

To aid the priority-setting process for testing chemicals TOSCA established the Interagency Testing Committee (ITC) composed of representatives from eight federal agencies. The ITC can designate a priority list of up to 50 chemicals for special consideration by EPA. Within 12 months of an ITC recommendation, EPA must either initiate rule-making proceedings to require testing or publish reasons for not doing so. In selecting chemicals for the priority list:

...the ITC is to consider the extent of human exposure and environmental release of the chemicals as well as all available information on their health and environmental effects. TSCA directs the Committee to give special attention to chemicals known or suspected of causing cancer, gene mutation, or birth defects.⁸

The ITC has published several lists since 1977. About 20 individual chemicals and 13 chemical categories have been listed.

The EPA also gives higher priority to chemical substances that may produce chronic health effects than those that produce acute effects. It emphasizes those whose effects are either irreversible or slowly reversible and debilitating; for example, oncogenic, mutagenic, teratogenic and neurotoxic effects.⁹

EPA's priority-setting process for identifying hazards is by no means a tidy one. Priorities for testing can emerge as described above. Priorities can also emerge from the PMN process for new substances. Finally, priorities can emerge from legal and other initiatives or actions taken by groups through the courts and by other means. In addition there may be different priorities for actual controls and regulation-making. Because TSCA is new it inherits an agenda of hazard which is by now familiar. TSCA included a specific reference in the statute itself to PCB's. EPA has also taken regulatory action on dioxins, asbestos and chlorofluorocarbons. In its five-year history, however, very few toxic substances have been processed through the entire elaborate regulatory rule-making required under TSCA.

OSHA and Cancer Policy

The United States Occupational Safety and Health Administration (OSHA) has been extensively involved, as noted above, in the interagency effort to devise priorities for the regulation of toxic substances. It has been assisted in this role by the National Institute of Occupational Health and Safety (NIOSH), a separate and independent governmental re-

search institute. NIOSH is primarily a research agency. It has no regulatory powers but can recommend that certain hazards be subject to regulation by OSHA. Of particular interest to us in this study is OSHA's recent effort to promulgate a generic carcinogen policy or cancer policy, since it illustrates particular problems of, and ways to deal with, both the technical and political aspects of hazard identification. The policy was initiated in 1977 as a draft and finalized in January 1980. In announcing the final policy, Eula Bingham, Assistant Secretary of OSHA at that time, pointed to the central dilemma:

... in the nearly nine years OSHA has been in business, it has been able to issue final regulations at an average rate of only about two per year. With several thousand potential carcinogens in America's workplace, we clearly faced an impossible task at this rate.

One of the major factors inhibiting the issuance of regulations to control workplace carcinogens has been the need to cover the same ground in each and every rule-making proceeding. We found ourselves debating the same questions of appropriate testing and interpretation for each carcinogen we investigated. So, one of the major purposes of the cancer policy is to avoid this re-invention of the wheel - to say in one policy statement what our criteria are for classifying carcinogens. What we have done is to decide, for regulatory purposes, how we will deal with certain types of data and studies in determining whether a substance is carcinogenic.

... it will permit industry to forecast far more accurately than in the past what our probable actions will be in dealing with particular toxic substances. This should permit much greater anticipation on the part of industry and encourage voluntary compliance even before we have taken official action.¹⁰

The OSHA Cancer Policy establishes a system for identifying and classifying carcinogens based on the nature and extent of the scientific evidence of their cancer causing potential. It also provides a standard-setting procedure that will guide future OSHA regulatory activities, including the annual publication of a "candidates list" of potential occupational carcinogens.

There are three central elements to the OSHA plan:¹¹ (a) the classification of suspect carcinogens into two categories, each subject to different specific compliance concepts; (b) the treating of certain scientific questions as "resolved" and hence not subject to challenge in a rule-making proceeding; and (c) the setting of strict time limits for the different stages in rule-making including a six month overall limit from proposal to final rule.

A Category I listing occurs when there is positive epidemiological evidence in humans, or positive results from a single long-term animal test confirmed by a "concordance" with other evidence. Concordance may be supplied by "short-term" tests of mutagenic action, such as in mammalian cell cultures or bacteria, or by other "suggestive" animal evidence. A Category II listing occurs for those chemicals where an animal test is only "suggestive" or where concordance is lacking.

It is important to stress that the strength of scientific evidence is the only basis for listing in either category. Other criteria, such as number of potentially exposed workers, can only be considered in ranking substances within each category.¹²

The policy specifies that worker exposure to Category I carcinogens will be reduced to the lowest feasible level, primarily through engineering and work practice controls (not personal protective devices). This is based in part on the finding that there are no known means of establishing levels for carcinogens below which there would be no risk to workers. Exposure is to be reduced to zero if "suitable substitutes" exist. Worker exposure to Category II carcinogens will also require exposure reduction but the level will be determined on a case-by-case basis.

OSHA will also publish in the Federal Register at least every six months, two priority lists for further scientific evaluation and possible regulations. The list will be based on the existing "candidates" list, or on information or petitions from other sources. Each list will contain approximately ten substances, one list for Category I rule-making and the other list for Category II rule-making.

The policy also enables OSHA to request at any time that the heads of the National Institute for Occupational Safety and Health (NIOSH), the National Cancer Institute (NCI), and/or the National Institute of Environmental Health Sciences (NIEHS) convene a scientific review panel. Such panels "are to consist of appropriately qualified individuals in the disciplines relative to the issues to be considered and are to include only Government employees."¹³ Panels are required to submit findings within ninety days; otherwise OSHA may proceed on its own to make a determination.

While the OSHA Cancer Policy is now in place, its actual operation is very much dependent upon both judicial review and the new "anti-regulation" philosophy of the Reagan Administration.¹⁴ For example, in 1980, in a five to four vote, the Supreme Court struck down OSHA's stringent regulation on benzene primarily because OSHA did not provide sufficient evidence of the regulatory benefits of the new standards. The decision did not deal directly with the central question of "whether the benefit of a regulation, as deduced from the magnitude of health risks, must be balanced against the cost of compliance."¹⁵ It did, however, challenge OSHA's strong preference to use scientific evidence of risk as its primary criteria, a central feature of the Cancer Policy.

A later Supreme Court decision in June 1981 involving cotton dust appears to strengthen OSHA's position. The Court declared in broad terms that the benefits of new rules limiting exposure to cotton dust should not be measured against the costs.. The Court held that regulations must be feasible but the only constraints on feasibility were whether a standard is scientifically achievable and whether its costs would be so prohibitive as to jeopardize the economic health of the industry.¹⁶

The Reagan Administration will undoubtedly put its imprint on the OSHA policy. Thorne Auchter, the new Director of OSHA, has stressed that review and revision of current OSHA standards is a higher priority than new initiatives.¹⁷ For example, he has withdrawn a requirement for the labelling of toxic chemicals in the workplace. The development of a list of priorities to be considered under the OSHA Cancer Policy, which itself will be revised, is a low priority. A planned reduction in personnel will also slow down the regulatory process, especially in this aspect of OSHA's work.

DEVELOPMENTS IN THE FEDERAL GOVERNMENT

There are three federal developments in the last six years which reflect a recognition by the Government of Canada of the need to identify hazardous substances more systematically. In each case the initiatives have been of a tentative kind. These developments are the Environmental Contaminants Act of 1976, the Science Council of Canada's recommendations arising out of its 1977 study, Policies and Poisons, and the establishment in 1980 of the Canadian Centre for Occupational Health and Safety now in operation in Hamilton, Ontario. Each of these developments is described briefly.

The Environmental Contaminants Act (ECA)

The ECA was a direct Canadian response to the same concerns that led to the passage of the American TSCA described above. The ECA, however, contains generally weaker powers and left greater discretion in the hands of the Minister of the Environment and the Minister of National Health and Welfare.¹⁸ It provides for the identification of the potential entry of a chemical into the environment and an assessment of its likely impact. It also provides that "where the Governor in Council is satisfied that a substance or class of substances is entering or will enter the environment in a quantity or concentration or under conditions that he is satisfied constitute or will constitute a significant danger in Canada or any geographical area thereof to human health or the environment,"¹⁹ the government may place the substance on the Schedule and simultaneously bring in regulations outlining restrictive measures designed to prevent that substance from entering the environment. The Schedule is therefore a list of substances that have been regulated.

It is important to note that the ECA is residual legislation in that if a dangerous substance can be controlled by some other law, it may not be necessary to use the ECA. This means, for example, that occupational hazards would be excluded because they would be dealt with under the Canada Labour Code. When it does apply, however, the ECA includes the power to prohibit certain activities and to gather information. It is the latter which particularly concerns us in the hazardous identification process, since it is the focal point of the Department of the Environment's (DOE) effort to create an "early warning" system.

Section 4.6 of the ECA requires that chemical and manufacturing companies notify DOE when, for the first time, they use more than 500 kilograms of a chemical within a calendar year. Production and other data may be required and companies can be required to carry out tests. The ECA also contains a provision for an Environmental Contaminants Board of Review to which proposed orders and regulations must be referred for review if notice of objection is filed (section 6.1).

In devising its early warning system DOE has developed a priority list of known and suspected hazardous substances. An initial list was distributed widely for comment in 1976 and has been revised several times. The latest list contained in the Canada Gazette of November 29, 1980 does not mention contaminants such as arsenic, asbestos, benzene, lead, nitrogen and sulphur oxides or polynuclear aromatic hydrocarbons "because they are being investigated or controlled under legislative mandates other than the Environmental Contaminants Act."²⁰ Chemicals that are used solely as drugs, food additives or pesticides are arbitrarily excluded from consideration because they are already scrutinized or controlled under other federal legislation.

The 1980 List of Priority Chemicals is divided into three categories as follows:

CATEGORY I: Those substances which the government is satisfied pose a significant danger to human health or the environment and for which regulations or specific control strategies are being developed.

- Polychlorinated Biphenyls (PCB's)
- Chlorofluoracarbons (CFC's)

CATEGORY II: Those substances which are being investigated to determine the nature and the extent of the danger to human health or the environment and the appropriate means to alleviate that danger.

- Cadmium
- Chlorophenols

CATEGORY III: Those substances which may pose a significant danger to human health or the environment and about which further detailed information (for example toxicology and amounts used) is required.

- Chlorobenzenes
- Hexachlorabutadiene (HCBD)
- Hexachlorocyclopentadiene and Adducts
- Mercury
- Organotins
- Phthalic Acid Esters
- Triaryl Phosphates and Related Substances²¹

In addition, in 1979 a second list of chemicals entitled Candidate Chemicals was drawn up for the purpose of specifically evaluating potential problems. The data for substances on this list were generally weak and hence more information and testing is underway.

Senior DOE officials acknowledge the critical importance of the links between the Canadian early warning system and the information it expects of the American TSCA system. As J.E. Brydon of Environment Canada stressed, "It is hoped and expected that the information developed by those chemical companies in the U.S. and elsewhere in the world will be made available to allow us to develop a reasonable position quickly."²²

In 1979 DOE established a Toxic Chemical Management Centre to help set regulatory priorities, establish education and information programs, and develop a control strategy. At full strength it will be composed of about twenty persons, primarily scientific personnel. The Centre possesses no direct regulatory powers. Its functions are directed by a steering committee of several departmental assistant deputy ministers.

The early DOE priority lists have been culled from lists in other countries, particularly the U.S., as well as obvious issues already present on the Canadian hazards agenda (e.g., mercury). There does not

appear to be any obvious interdepartmental body to help co-ordinate the development of priorities or to aggregate and publish the lists that emanate from other statutory provisions in the field of drugs, pesticides or occupational health concerns.

It must also be stressed that ECA came into existence just at the time that DOE's overall resources were beginning to shrink relative to the more pressing economic concerns troubling the Canadian economy.²³ The ECA has been given only very limited resources well below the proportionate resources given to the TSCA program²⁴ in the U.S. (even taking into account recent cuts imposed on EPA by the new anti-environment Reagan Government).

The 1977 Science Council Proposals

In October 1977 the Science Council of Canada, an advisory body on science policy which reports to the Minister of State for Science and Technology, published its report Policies and Poisons.²⁵ The report analyzed the containment of long-term hazards to human health in the environment and in the workplace. The report included analyses of case studies of six specific hazards: lead, radiation, asbestos, mercury, vinyl chloride and oxides of nitrogen. To enable Canada to have a better process of risk assessment and a better process for the determination of acceptable risks, the Science Council recommended that a National Advisory Council on Occupational and Environmental Health (NACOEH) be established by statute.²⁶ NACOEH's mandate would be to designate hazards and ensure that assessment of risks are undertaken and published in respect of any hazard it may designate. It would also be responsible for

publishing recommended standards of maximum permissible exposure levels for Canada. NACOEH would evaluate and recommend which hazards should be subjected to regulatory control but it would not be the regulator. It would decide research priorities and would determine specific contracts for studies or for major reviews of the literature placed through the National Research Council, the Medical Research Council and other appropriate agencies.

The Science Council also recommended that a medical record system be designed to link medical and occupational records to permit the linkage between occupational exposure to materials and subsequent causes of death to be studied on a continuing basis.

Little has resulted from the Science Council's recommendations. This is partly due to the Council's general lack of influence and the weak position of successive and frequently changing Ministers of State for Science and Technology.²⁷ More importantly, however, it can be attributed to the general lack of political support for anything that implied the fact (or even the perception) of more "social regulation" at a time when the Canadian economy was experiencing difficult times. It was in 1978 that the federal government was emerging from wage and price controls, embarking on new regulatory cost-benefit processes, and engaged in pre-election expenditure restraint measures.²⁸ The political position of the government was to show economic responsibility which included the perceived need politically not to impose expensive new social regulation or even the appearance of it on Canadian industry. In this climate, the Science Council's central recommendation fell on decidedly deaf ears.

A further manifestation of the unfavourable climate during this period was the abortive effort by the National Research Council of Canada (NRC) to gain support and resources within the federal government for the establishment of a first class centre for toxicological research in Canada. There was general agreement within the government that Canada's capabilities in this field were limited in the face of the agenda of future hazards and that a new institution was needed. The effort succumbed to a mixture of budget cuts, interagency dispute over which department should control it, and dispute over where and near which university it should be located.

The Canadian Centre for Occupational Health and Safety

The Science Council of Canada can claim some share of the credit for the decision in 1978 to establish the Canadian Centre for Occupational Health and Safety (CCOHS).²⁹ In general, however, the establishment of the Centre had much more to do with the Federal Government's felt political need to appease the labour movement angered by the imposition of wage controls in the 1976 to 1978 period. The CCOHS became a small part of the federal Liberal's 14-point package for labour and hence was part of the labour movement's consolation prize for wage controls.³⁰ It can in no way be considered an aggressive new initiative in occupational health and safety nor is it a research agency such as that envisaged by the Science Council or in the abortive plan for a toxicology centre. The CCOHS's role is purely informational and advisory in nature, and it has been given only very limited resources. The CCOHS has begun some useful work in disseminating information in response to requests from organized and non-unionized workers.³¹ We will return, in Chapter 5, to a discussion of its role in relation to the Science Council proposal and to environmental hazards.

Other Federal Developments

In 1979 the short-lived Clark Government introduced Freedom of Information legislation. The bill sought to increase greatly the access by Canadians to information held by the Federal Government.³² The legislation, not unexpectedly, contained a number of exemptions or grounds on which access could be denied, including national security, international relations, federal-provincial relations, commercial secrets and matter directly affecting policy development by the Cabinet. In addition there is a provision which would allow government officials, at their discretion, to refuse to release the results of testing and scientific data if their release could in their view lead to potential misleading misinterpretations.

At time of writing the legislation has not been passed by the House of Commons. Opposition parties are seeking amendments including major change to the provision regarding the release of testing data. It need hardly be said that this provision as it stands could detract from the development of a more systematic hazard identification process in Canada. At the very least the hazard identification process requires a fairly free and open communication of data and research.

DEVELOPMENTS IN THE ONTARIO GOVERNMENT

There are four developments in the Ontario Government which suggest awareness of the need to set priorities in the hazard identification process. These first tentative developments have begun in the Advisory Council on Occupational Health and Occupational Safety (ACOHOS), the Ministry of Labour, the Ministry of the Environment and the proposal to establish a joint study centre for toxicology.

Advisory Council on Occupational Health and Occupational Safety

The Advisory Council consists of eleven part-time appointed persons drawn from labour, business, and scientific and professional groups. It has a general mandate to advise the Minister of Labour regarding the programs of the Ministry of Labour in occupational health and safety including advice on matters brought to the Council's attention by outside groups and citizens.³³ Now ending its third year of operation, the Advisory Council has tendered advice on such diverse issues as policies and principles for occupational health and safety programs for small establishments; policies and principles concerning economic impact analysis of occupational health and safety statutes and regulations; and occupational hearing loss, to name only a few. Some of the Council's work can be considered to be indirectly related to improving the groundwork and processes for hazard identification in the workplace.

The Advisory Council has not directly attacked the question of priorities in identifying hazards. In 1981, however, it began one project which will bring it one step closer to rendering advice on this question. It has also begun consideration of the recommendations of a special Task Force on Carcinogens.³⁴ As was the case with the discussion above of the OSHA Cancer Policy, one of the essential dilemmas of the Advisory Council's Task Force was how to devise economically effective ways to screen and test the numerous new substances which industry was introducing into the workplace, and about which industry was now legally obliged to inform the Ministry of Labour. Since this question has been referred to in the section on OSHA and developments in the United States and will be discussed again in Chapter 5, we have simply noted the Advisory Council's role in this process in Ontario.

Ministry of Labour

Since the passage of The Occupational Health and Safety Act in 1978 the Ministry of Labour has been pre-occupied with the enormous task of putting the key items of the legislation in place. This includes developing regulations for the first seven substances designated under the terms of the legislation, establishing the system of workplace committees and so on. It has, however, also been conscious of the need to develop priorities for hazard identification. A list of fifty-two substances has been developed by an internal committee³⁵ (see Chart 4.1). The list was drawn from various U.S., federal and Ontario sources. New inspection forms have been designed which will enable the Ministry to identify the presence of many but not all these substances in Ontario workplaces. The forms will record the presence of the hazards though not necessarily actual volume in use.³⁶ It should be stressed, however, that there is no firm list of priorities as to which hazards will be subject to standard-setting after the first seven designated substances have been processed through the full regulatory standard-setting process. (See our separate study on the standard-setting process.)

The Ministry of the Environment

The basis for the identification and control of environmental hazards in Ontario rests in four statutes: The Environmental Protection Act, The Water Resources Act, The Pesticides Act and The Environmental Assessment Act.³⁷ The Ministry of the Environment is also an active participant as part of the Canadian delegation on the International Joint Commission which regulates water quality in the Great Lakes. The statutes do not specifically deal with toxic substances but relate to all

CHART 4.1

Ontario Ministry of Labour Workplan for
Identification of Biological, Chemical and Physical Hazards

Fiscal Year1980/81

Arsenic
Chromium
Benzene
Acrylonitrile
Aromatic Amines and Azo Dyes
Diesel Exhaust Fumes
Toxic Substance Labelling
Carcinogens Policy
Cadmium
Formaldehyde
Coke Oven Emission
Nethyl Chloroform
Tetrachloroethylene
Styrene
Trichloroethylene
Nichel
Pesticide Formulation
Hazardous Waste Handling
Coal Tar Pitch Volatiles
Ethylene Oxide
Beryllium
Hazardous Biological Agents

1982/83

Nitro and Nitroso Compounds
Iron Exide
Ketones
Hydrogen Flouride and Fluorides
Wood Dust
Organotin Compounds
Pharmaceuticals
Aliphatic hydrocarbons
Sulphur Dioxide
Vibration
Cotton Dust
Ozone

1981-82

Epoxy Resins
Chlorinated Hydrocarbons
Fire Retardants
Radiofrequency sealers and
heaters
Anesthetic waste gases
Oxides of Nitrogen
Chlorine
Reproductive Hazards in the
work place
Toluene
Xylene

1983/84

Welding fumes
Wood Preservatives
Ultraviolet radiation
Maleic Anhydride
Acrylic Esters, Acrylic acid and
Acrylamide
Trimellitic Anhydride
Antimony
Methylene Chloride
Predictive testing of
hypersusceptibility

Source: Ontario Ministry of Labour, 1981.

contaminants that impair the quality of the environment. Specific concerns about the disposal of liquid wastes prompted the Ministry to create in May 1980 a Hazardous Contaminants Office to co-ordinate all Ministry programs related to hazardous substances. The small office of three persons has barely begun its work, and hence judgement of it would be premature.

Like the Ministry of Labour, the Ministry of the Environment, through its new office, has begun to devise priority lists of hazards which it updates annually. Though Ontario Environment officials have sought to link their list with federal lists (e.g., under The Environmental Contaminants Act) they have more specifically been influenced by their work on the International Joint Commission.³⁸ Ontario priorities have therefore been influenced especially by the importance of the Great Lakes whose almost 500 chemicals constitute a formidable potential agenda of hazards. The Ministry of the Environment has therefore thought about priorities in a general way.

Finally, it is important to note the proposal to establish a centre for the study of toxicology. The proposal emerged in January 1981 as part of the Ontario government's Board of Industrial Leadership and Development (BILD) initiatives.³⁹ The Ontario Government has committed initial funds to the University of Toronto and the University of Guelph to prepare plans for a joint study centre. Federal funds will probably be requested once the mandate and functions of the centre are approved. This Ontario effort should be noted in relation to the abortive federal attempt to create a toxicology facility described above. We will return to this subject in Chapter 5.

As we will see in Chapter 5, however, it is one thing to think about priorities and quite another to be given the luxury to implement them. At each of the jurisdictional levels, described briefly above, there is evidence that governments are aware of the need to set priorities in hazard identification. They are beset, however, by the classic limitations of trying to be rational while they respond to single cases.

NOTES TO CHAPTER 4

1. Organization for Economic Co-operation and Development (hereafter cited as OECD) Press Release on OECD High Level Meeting on Chemicals. Paris, 21 May 1980, p. 1.
2. Countries with such legislation include: Switzerland (1969), Japan (1973), Sweden (1973), U.K. (1974), Canada (1975), Norway (1975), U.S. (1976), France (1977), Denmark (1979), and New Zealand (1979).
3. OECD, op. cit. note 1, at p. 2.
4. See United States Environmental Protection Agency (hereafter cited as EPA), The Toxic Substances Control Act: An Overview of Its Authorities and Major Activities (Washington, D.C.: EPA, September 1979) and Gerard A. Rohlich and Richard Howe, The Toxic Substances Control Act: Overview and Evaluation, Regulation Reference, Working Paper No. 21 (Ottawa: Economic Council of Canada, 1981).
5. EPA, "Implementing the Toxic Substances Control Act: Where We Stand," mimeographed (Washington, D.C.: EPA, November 10, 1980), p. 3.
6. Interviews.
7. EPA, "Implementing the Toxic Substances Control Act: Where We Stand," op. cit. note 5, at p. 5.
8. EPA, The Toxic Substances Control Act: An Overview, op. cit. note 4, at p. 8.
9. EPA, "Implementing the Toxic Substances Control Act: Where We Stand," op. cit. note 5, at p. 2.

10. Eula Bingham, "Remarks at Cancer Policy News Briefing," (Washington, D.C.: United States Department of Labor, Office of Information, 16 January 1980), pp. 2-3.
11. See Federal Register, vol. 45 no. 15 Book 2, Tuesday 22 January 1980, pp. 5001-5296.
12. For criticism of this emphasis see editorial comment in Regulation: AEI Journal on Government and Society 5:2 (March/April 1980): 4-7.
13. Federal Register, op. cit. note 11, at p. 5203.
14. See "Deregulation HQ: An Interview of the New Executive Order with Murray L. Weidenbaum and James C. Miller III," Regulation: AEI Journal on Government and Society 5:2 (March/April 1981): 14-23.
15. R. Jeffrey Smith, "A Light Rein Falls on OSHA," Science 209 (August 1980): 567-568.
16. As reported in "Justices Uphold Exposure Limited on Cotton Dust," Wall Street Journal, 18 June 1981, p. 3.
17. R. Jeffrey Smith, "OSHA Shifts Direction of Health Standards," Science 212 (25 June 1981): 1482-1483.
18. See P. Nemetz, J. Sturdy, D. Uyeno, P. Vertinsky, J. Vertinsky and A. Vining, Regulation of Toxic Chemicals in the Environment, Regulation Reference, Working Paper No. 20 (Ottawa: Economic Council of Canada, 1981).
19. Environmental Contaminants Act, Section 3(3), S.C. 1974-75-76, c.72.
20. Canada Gazette Part I. (29 November 1980), at p. 7239.
21. Ibid., pp. 7240-7241. The phrase "human health" is meant to exclude health in the workplace since this is covered by other statutes.

22. J.E. Brydon, "Notes of the Environmental Contaminants Act," (Speech to Canadian Chemical Producers' Association, Ottawa, 8 April 1976), p. 4.
23. For an analysis of DOE's expenditures in the 1970's see Michael Whittington, "Department of the Environment," in Spending Tax Dollars: Federal Expenditures 1980-81, ed. G. Bruce Doern (Ottawa: School of Public Administration, Carleton University, 1980), Chapter 4.
24. On TSCA resources see Rohlich and Howe, op. cit. note 4, at pp. 187-195.
25. Science Council of Canada, Policies and Poisons, Report No. 28 (Ottawa: Supply and Services, 1977).
26. Ibid., p. 31.
27. Peter Aucoin, "Ministries, Ministers of State and Policy Coordination," in Public Policy in Canada, eds. G. Bruce Doern and Peter Aucoin (Toronto: Macmillan of Canada, 1979), Chapter 8.
28. For an analysis of this period see G. Bruce Doern and R.W. Phidd, "The Board of Economic Development Ministers and the Lambert Commission on Financial Management and Accountability: Some Implications of Economic Management in the Government of Canada." (Paper presented at Canadian Political Science Association Meetings, Saskatoon, 1 June 1979).
29. For a general account of the Centre's role, see Canadian Centre for Occupational Health and Safety, President's First Report to the Council of Governors (Hamilton: Canadian Centre for Occupational Health and Safety, 1980).

30. See Gene Swimmer, "Labour Canada: A Department of Labour or for Labour," in How Ottawa Spends Your Tax Dollars, ed. G. Bruce Doern (Toronto: Lorimer, 1981), Chapter 5.
31. Interviews. See also Canadian Centre for Occupational Health and Safety, President's Third Report to the Council of Governors (Hamilton: Canadian Centre for Occupational Health and Safety, October, 1980).
32. This is discussed in G. Bruce Doern, The Peripheral Nature of Scientific and Technological Controversy in Federal Policy Formation, Study No. 46 (Ottawa: Science Council of Canada, 1981), Chapter 1.
33. Ontario Advisory Council on Occupational Health and Occupational Safety, Second Annual Report (Toronto: Queen's Printer, 1980) and Third Annual Report (Toronto: Queen's Printer, 1981).
34. Interviews.
35. Interviews. See also Ontario Ministry of Labour, Written submission to the Royal Commission on Asbestos, #43, February 1981.
36. Interviews.
37. Ontario Ministry of the Environment, Hazardous Contaminants Office, "Assessment of Toxic Substances Legislation in the Province of Ontario," mimeographed (Toronto: Ontario Ministry of the Environment, 1981).
38. International Joint Commission, Great Lakes Water Quality Board, First Report of the Toxic Substances Committee (Windsor, Ontario: International Joint Commission, November 1980).
39. Honourable William G. Davis, Building Ontario in the 1980s (Toronto: Queen's Printer, January 1981), p. 30.

C H A P T E R 5

CONCLUSIONS AND OBSERVATIONS

We have now examined how hazards have been identified in the past largely on a case-by-case basis. We have also reviewed more recent efforts by governments to be more systematic in the identification of hazards. The question remains as to whether there are better ways to identify hazards. Before offering some suggestions about future reform it is useful to summarize the major conclusions and observations which emerge from our analysis (keeping in mind the qualifications needed because of the disparate sources of data used). These conclusions and observations are:

- Hazard identification in environmental and occupational health and safety in general has not been a high priority concern of governments in Canada.
- There are several types of technical identification in the overall process of assessing risks, including identification of the existence of a substance, its condition, its specific effects and the probability of it impacting on all or part of the population. It is imperative that these technical aspects be dealt with on the basis of the best concepts of rigorous scientific testing including peer group criticism.

- The Asbestos in Ontario Schools case shows that public officials can both respond too slowly and too quickly in the identification process. The case study shows that in the workplace aspects of asbestos, the response had been inadequate, given the proven risks, while in the environmental context of children in schools the response was perhaps too precipitous, given the lack of data, preparation and capability to inspect.
- There is a significant gap between the existence of real risks and the public perception of risks.
- There is evidence to support the conclusion that environmental hazards are more readily identified politically than are workplace hazards.
- Among major institutions, labour unions have been the primary initiators in the political identification of workplace hazards. Despite this there has been much greater difficulty in identifying workplace hazards on the political agenda. This suggests that institutional mechanisms should be created to greatly strengthen the response to labour's concern including its priorities for future hazards.
- The media's role in hazard identification is a critical one. It cannot be said, however, that the media is the agenda-setter since this belies the complex interplay that exists among institutions. While there has been a marked increase in the quantity of science writing in Canadian journalism there is room for much improvement in its quality, especially in communicating to Canadians a more general appreciation of the nature of risk, particularly the differences between the assessment of risk and the probability of its occurrence and the existence of several technical dimensions in the hazard identification process.

- At both the federal and provincial levels of government several departments have begun to prepare lists of priority hazards. There is little evidence of co-ordination among the main departments concerned in the development of priorities for hazards.
- While better co-ordination can undoubtedly be achieved in identifying future priorities, it is unrealistic to expect that it will produce a single priority list. The production cycle is such that legitimately different priorities can and will emerge in such sectors as consumer products, agriculture, the environment and the workplace.
- Virtually all institutions agree that Canada still lacks a central accessible independent research institution where Canadians can look for information and guidance as to the health and environmental effects of particular hazards, products or substances. The Canadian Centre for Occupational Health and Safety is not designed to fulfill both the research and the information dissemination roles and its mandate covers only occupational health and safety.
- Higher levels of international and federal-provincial co-operation and sharing of data and information are an essential prerequisite if improved processes of hazard identification are to be developed.
- The role of the private insurance industry in the hazard identification process could probably be increased. At the very least its role deserves detailed careful study, since the industry is, by definition, engaged in the professional assessment of risks of all kinds.

THE CENTRAL PURPOSE OF HAZARD IDENTIFICATION:DETERMINING HUMAN HEALTH EFFECTS

The central purpose of hazard identification must be to identify the adverse human health effects of various substances and products as they impact upon human beings in the workplace and in the broader environment. Even though these substances and products often confer benefits on certain segments of society, we conclude on normative grounds that economic purposes should not be central at this stage. In this important sense, we share the "burden of proof" priority advanced by labour unions. We do so because it is evident that there are ample opportunities, arising from the basic structure of power in Canadian politics and economics (federal and provincial) in the later regulatory stages for economic factors to be fully considered in those stages. Health effects on human beings should be the primary concern at the hazard identification stage.

It has been stressed throughout this study, however, that the technical identification of hazards involves at least four kinds of identification, namely:

- the existence of a substance;
- its condition;
- its specific effects; and
- the probability of it impacting on all or part of the population.

In this sense therefore the overall purpose of the hazard identification process to assess health effects must be related to its particular components. In this regard two general weaknesses of the current approach deserve emphasis.

First, it is clear that Canadian regulators (federal and provincial) must grapple with setting some rules about the acceptability of scientific and testing data and must increase the resources given to testing laboratories including funds to devise more inexpensive tests (especially for potential carcinogens). The OSHA Cancer Policy could serve as a useful model. Unless some rules of scientific evidence (and how regulators should treat it) are developed, Canadians will be doomed to the case-by-case approach. The OSHA approach cannot only assist in the development of categories of priorities based in part on levels of scientific certainty but it can also speed the decision process by preventing the needless repetition of technical debate where scientific data is reasonably certain.

Second, the capacity to assess the probability that given substances will impact on all or parts of the population depends fundamentally on the existence and use of data on production and distribution volumes. Federal and Ontario environmental and occupational health legislation already allows governments to collect data on the volume and patterns of trade and use of chemicals and other substances. However, there seems to be little concerted effort to utilize this data for purposes of future priority setting in identifying hazards. As a result, little that is known about these patterns of use and volume are made public. Regulators have been preoccupied with past single cases, have lacked resources, and have been sensitive about doing too much with the mounds of data they possess lest they alienate the industries who opposed the existing legislation, yet whose support they need to deal with the current agenda of hazards. It remains nonetheless true that reasonably objective data of this kind is needed and must somehow be collected, analyzed and communicated in a public and accessible way.

THE REFORM OF HAZARD IDENTIFICATION PROCESSES AND INSTITUTIONS

A critical need in the hazard identification process is that of open and independent sources of research, data and information about hazards. This need is reflected in several areas. It exists at the international level where the Canadian Government must press its OECD partners to ensure that the agreements described in Chapter 4 give maximum scope to the free exchange of pre-testing and other data, and minimum scope to the dictates of commercial privileged information.

At the federal level it requires the elimination of the clause in the Freedom of Information legislation which would allow officials not to release testing data where they thought it would be misleading. Mere freedom of information, however, is not a sufficient basis for change in this field. If technical data becomes available it must be subject to scrutiny by persons competent to judge and deal with these data and independent enough to be trusted by the major institutions involved.

Above all it requires the establishment and proper funding of an independent research agency with the general attributes proposed by the Science Council of Canada in its 1977 Policies and Poisons study. No existing institution has the resources, prestige or critical mass of expertise to fulfill this central and vital national hazard identification role.

Indeed there is a considerable danger that research resources will be divided too thinly among several institutions no one of which could perform this vital function adequately. The early history of the Canadian Centre for Occupational Health and Safety and the recent federal and provincial efforts to create a centre of toxicological research illustrate this all too familiar Canadian dilemma.

A national research agency for hazard identification should have the following role, scope and governing structure. Its primary role should be to conduct and review research on the human health effects of products and substances as manifested both in the workplace and in the environment. This would require it to examine and report on all four aspects of hazard identification discussed above. It would also suggest priorities for regulation to the several federal and provincial agencies engaged in the regulation of health and safety. It would therefore not produce just a single general list of priorities but rather suggest priorities for each of the main sectors, the workplace and the internal and external environments. The requirement that it advise on priorities would not only be useful to these agencies but would exert discipline on the research agency itself.

The scope of the agency's mandate should include both the workplace and the environment since, in the final analysis, hazards are interrelated. The environment should include the "internal" environment such as buildings, as well as the outdoor environment. This is necessary since the same product may prove to be hazardous in quite different ways and to different degrees in each of these sectors and yet, at the same time, be closely related in all of them.

The agency should be governed by a council composed of scientific and technical experts only. The representation of business, labour and other interests should be accommodated not on this council but rather through other advisory bodies to the several federal and provincial ministries engaged in the later regulatory processes. Recommendations to insure this important aspect of representation are outlined in the separate study on standard-setting and implementation. The structure of the proposed research agency must insure that it will be an independent research institution that can command respect and credibility.

The agency should be considered a national resource. A national capability for toxicological research should be a central part of the proposed agency. One cannot stress too greatly the need for such an institution and the parallel requirement that it be given generous resource support. The prospects of future improvement in the hazard identification process are not great unless the technical aspects of hazard identification are recognized in a viable, independent institutional form.

It is essential as a matter of principle that the function of suggesting and developing priority lists based on the concepts outlined above be kept separate from the subsequent standard-setting and implementation functions. While information from, and the views of, the bodies involved in the latter functions are essential, care must be taken to establish the hazard or risk assessment function on as independent a basis as possible.

Past experience indicates that, from time to time, there will be scientific and technological controversy surrounding particular hazards. A mechanism should exist in environmental and occupational health legislation to enable scientific panels to be appointed by the proposed new agency. The membership of these panels should be based on the recommendations of reputable scientific bodies. These panels would be empowered to prepare and publish their reports on the nature of these specific technical disputes, and their view of them, within a fixed specified time period (e.g., 90 days).

The logic of developing priority lists of hazards implies that high priority hazards will be dealt with in subsequent regulatory processes differently than lower priority hazards. The list of hazards in the first category will presumably be subject immediately to a formal standard-setting and/or regulatory procedure. The list therefore should be

kept short since there are inherent limits to the number that can be handled by these subsequent procedures. The second lower priority list will logically be subject to further testing and analysis.

The analysis in Chapter 4 shows that priority lists exist but that there is no obvious indication of the ways in which these lists trigger certain kinds of regulatory behaviour. Unless this is made explicit by statute and unless the lists are made known to the interests and persons at risk, there is little point in developing them.

The history of occupational and environmental health and safety, as the case studies attest, shows that merely developing Category I and II lists based on more formal criteria will not be sufficient politically or technically. There are always exceptions. How does a more "rational" system, as envisaged above, handle exceptions? First, some exceptions take care of themselves. If there is sufficient political concern or media pressure a way can be found to handle the issue through normal political channels since this is a normal condition of politics. But there are other exceptions -- hazards or items not on someone's official priority list. One such class of exceptions identified in the analysis is workplace hazards.

A conclusion of this study is that there are greater difficulties in securing the political recognition of workplace hazards. This could be remedied in part at least by according national or provincial labour federations a special statutory right, namely the power to petition regulators a limited number of times each year (say three per year) in respect of a particular hazard, with a requirement that the regulator provide a public reasoned decision as to the kind of action or inaction it proposes to take within a specified period of time.

The number of potential hazards which modern industrial society has produced and will produce is mind boggling. Governments are on the horns of a dilemma. They are damned by some if they do not plan their response. (We do not want more royal commissions is the frequent cry!) They are simultaneously damned by others if they do not respond to single cases involving a particular hazard. There is therefore a need for a more systematic basis for decisions and decision processes which will not send governments chasing after risks which are both improbable and affect few people. At the same time, the system must appreciate the rationality of democratic politics, a rationality which must always have room for exceptions and for the humane resolution of single events and cases involving often only a few individual Canadians. Canadians can "learn" about the nature of risks in the best sense of that word by the presence of both kinds of rationality in their future hazard identification processes.



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and Safety Arising from the Use of
Asbestos in Ontario

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